



# MAXIMISING AUSTRALIA'S **AUKUS** OPPORTUNITY



# EXECUTIVE SUMMARY

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AUKUS presents a once-in-a-generation opportunity to transform Australia's sovereign defence capabilities and deliver economic benefits across the country. The purpose of this report is to provide evidence-based insights and points for discussion to contribute to the public discourse and ultimately help stakeholders maximise defence and economic opportunities from the AUKUS partnership. The insights and points for discussion presented were compiled through a research and consultation process with stakeholders across defence, industry and research institutions.



## STRATEGIC CONTEXT

A significant transition is underway in the Indo-Pacific. A relatively cooperative security environment – one that enabled four decades of prodigious economic growth – is now becoming increasingly hostile. Strategic competition is escalating, changing the region's economic and security environment, and it is not yet clear how the balance of power will settle in the long term. Australia will have a prominent role to play in the outcome of this competition and in the Indo-Pacific's continued prosperity and security.

This role was formally recognised when the leaders of Australia, the United Kingdom (UK) and the United States (US) jointly announced the AUKUS partnership on 16 September 2021. The three nations resolved to help sustain peace and stability in the Indo-Pacific region by supporting each other's security and defence interests through deeper diplomatic, security and defence cooperation ties.<sup>1</sup>

AUKUS has the potential to fundamentally strengthen Australia's sovereign defence capabilities. Sovereign capabilities are an essential component to amplifying Australia's role in deescalating the risk of conflict and in the continued prosperity of the Indo-Pacific.

While AUKUS is a reinforcement of existing values and relationships, it brings a clear exigency to collaboration and developing defence capabilities.

The AUKUS partnership can largely be considered in two distinct parts. Firstly, acquiring and sustaining a nuclear-powered submarine (SSN) capability over a multi-decade program. Secondly, developing and accelerating the application of other advanced technologies in defence settings in the near term.

Progress has been made with a series of high-level meetings and working groups having taken place. Further progress is expected to be publicly communicated in early 2023.

## THE OPPORTUNITY FOR AUSTRALIA

AUKUS presents a chance to drive transformational change across Australia's economy, simultaneous to improving regional security. These changes include building more resilient supply chains, growing the advanced manufacturing sector and exports, and enhancing technological innovation.

### Increasing the resilience of defence supply chains

Heightened geopolitical tensions and a pandemic have combined to cause a sober reevaluation of global supply chains and their risks. While delays to imports such as cars and building materials are a significant inconvenience – a breakdown in critical defence supply chains has the potential for infinitely more far-reaching consequences. AUKUS can strengthen supply chains by:

- reducing dependence on individual suppliers and spreading risk across the three nations' industrial bases
- increasing Australia's domestic manufacturing ability through technology transfers, talent sharing and streamlined regulation
- expanding Australia's ability to stockpile critical products and inputs to provide a buffer against supply chain disruption.

### Expanding Australia's advanced manufacturing sector and exports

Advanced manufacturing has a major role to play in elevating Australia's productivity and household incomes. Moving up manufacturing supply chains to produce increasingly complex, higher value products has long been associated with per capita economic growth and increasingly to better social outcomes including equality and environmental benefits. AUKUS can enhance domestic manufacturing capabilities by:

- enabling technology transfers and access to more, or higher quality, inputs
- providing access to talent and know-how, to develop and build domestic skillsets
- streamlining regulation and removing 'red tape' to improve efficiency across immigration, export controls, culture, risk and procurement domains
- providing access to export markets, as the significantly larger UK and US defence markets will provide new opportunities for Australian businesses to sell and produce at scale, bringing cost efficiencies.

A stronger, more resilient economy which exports across the Indo-Pacific is a significant strategic advantage. The firm foundation of economic and political prowess can assist Australia in improving Indo-Pacific security and demonstrating Australia's commitment to democratic, neoliberal values in the region.

### Accelerating technological innovation






AUKUS presents a unique opportunity to drive innovation directly across the defence ecosystem and indirectly through the broader science, technology and manufacturing industries. AUKUS can contribute to innovation through two key channels:

- **Increasing competitive pressures via access to UK and US industrial bases:** Opening up supply chains means Australian, UK and US businesses will find new export markets, introducing new incentives to increase productivity and remain competitive.
- **Enabling dual-use innovations and indirect economic effects:** Defence is often at the cutting-edge of technical innovation and can act as a seedbed of knowledge for the transfer of human and technological capital to non-defence applications (that is, 'dual-use' across military and civilian applications).

## DELIVERING AUKUS EFFECTIVELY

The evidence base for this report was compiled through a research and consultation process with stakeholders across defence, industry and research institutions. Figure 1 outlines the key insights and points for discussion reported across five themes.

FIGURE 1: KEY INSIGHTS AND POINTS FOR DISCUSSION

	INSIGHTS	POINTS FOR DISCUSSION
	<p><b>Workforce</b></p> <ol style="list-style-type: none"> <li>1. Workforce planning on a national scale could alleviate skills gaps</li> <li>2. Reforming Australia's working visa programs would complement national skill building activities</li> <li>3. A collaborative approach to talent could be mutually beneficial to AUKUS nations</li> </ol>	<ol style="list-style-type: none"> <li>1. Joint national workforce plan</li> <li>2. 'AUKUS visa'</li> <li>3. Australia's Migration Program Planning Levels</li> <li>4. Expedited defence industry clearance</li> </ol>
	<p><b>US export controls</b></p> <ol style="list-style-type: none"> <li>1. ITAR reform is a critical component to holistic NTIB integration</li> <li>2. ITAR presents a finance and resource intensive compliance burden</li> <li>3. ITAR's treatment of intellectual property excessively disincentivises cross-border research and development</li> </ol>	<ol style="list-style-type: none"> <li>1. An 'AUKUS Office' - a tripartite agency to move away from bilateral export authorisations towards a framework driven environment</li> <li>2. A public AUKUS workplan</li> </ol>
	<p><b>Culture and innovation</b></p> <ol style="list-style-type: none"> <li>1. The government-industry relationship could be more conducive to innovation</li> <li>2. Risk tolerances should be weighed against the risk of failure to act</li> <li>3. New methods and market participants can help drive innovation</li> </ol>	<ol style="list-style-type: none"> <li>1. Cultural change across Defence to reflect the changing balance of risks</li> <li>2. Rapid prototype and implementation procurement models</li> <li>3. Capability development and procurement process enhancement</li> <li>4. State involvement in the funding of innovative start-ups</li> </ol>
	<p><b>Procurement</b></p> <ol style="list-style-type: none"> <li>1. An increased sense of urgency could enhance existing processes</li> <li>2. Industry engagement could be improved</li> <li>3. Defence commercial and contracting resource pools are under increasing strain</li> </ol>	<ol style="list-style-type: none"> <li>1. A 'fast lane' for AUKUS-related procurement</li> <li>2. Refresh of 'Broader Benefits to the Australian economy' procurement rules</li> <li>3. Reassessment of procurement risk culture</li> </ol>
	<p><b>Strategic choices</b></p> <ol style="list-style-type: none"> <li>1. Localisation is the new globalisation</li> <li>2. Australian Industry Capability and risk tolerances should reflect contemporary capability needs</li> </ol>	<ol style="list-style-type: none"> <li>1. AIC Program aims, and</li> <li>2. AIC Program requirements</li> <li>3. Rapid accreditation of US and UK production systems</li> <li>4. Reevaluation of SICPs</li> </ol>

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# INTRODUCTION

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The Indo-Pacific is undergoing a transition unlike anything seen since World War II. Strategic competition is escalating, changing the region's economic and security environment, and it is not yet clear how the balance of power will settle in the long term. What is clear, however, is that Australia has a prominent role to play in the Indo-Pacific's continued prosperity and security.

On 16 September 2021 the governments of Australia, the UK and the US announced the AUKUS partnership. The three nations had resolved to 'deepen diplomatic, security, and defence cooperation ... strengthen the ability of each [other] to support our security and defence interests ... [and] help sustain peace and stability in the Indo-Pacific region.'<sup>2</sup>

Specifically, the AUKUS partnership is a trilateral partnership which, through collaboration between the three allies, aims to accelerate the development of advanced capabilities based on cutting-edge technologies, including nuclear-powered submarines. Leveraging each nations' relative strengths can act as a true force multiplier across the partnership.

In some ways, AUKUS is a reinforcement of existing values and relationships, but it also brings a clear exigency to collaboration and developing defence capabilities. Given AUKUS is about strengthening existing links, the agreement itself is a tacit acknowledgement that change is required in how the three countries work together for peace. Strengthening and deepening the AUKUS nations' existing bonds to deliver Australian defence outcomes is now critical. The current security environment necessitates change across the defence ecosystem to ensure new capabilities are utilised by our defence forces and faster. The agreement also highlights the importance of Australia's role in sustaining Indo-Pacific stability.

While defence outcomes are of primary importance, AUKUS also presents a chance to deliver economic benefits across Australia. This includes increasing supply chain resilience, expanding Australia's advanced manufacturing sector and exports, and accelerating technological innovation.

A stronger, more resilient economy is a strategic advantage in and of itself – economic and political prowess is a firm foundation for military success.

As articulated by Australia's Deputy Prime Minister and Minister for Defence Richard Marles:

*We need a highly capable defence force which has the rest of the world take us seriously and enables us to do all the normal peaceful activities that are so important for our economy... With AUKUS there's a really huge opportunity beyond submarines of pursuing a greater and more ambitious agenda ... We're very hopeful about the potential that AUKUS represents in respect of that.<sup>3</sup>*

Recognising the challenges and responsibilities before us, PwC is proud to partner with the American Chamber of Commerce in Australia (AmCham) and the Australian British Chamber of Commerce (ABCC) on 'Maximising Australia's AUKUS Opportunity'.

The purpose of this report is to provide evidence-based insights and points for discussion to contribute to the public discourse and ultimately help maximise defence and economic opportunities from the AUKUS partnership, including:

- increasing defence supply chain resilience
- expanding Australia's advanced manufacturing sector and exports
- accelerating technological innovation.

This evidence base was compiled through a research and consultation process with stakeholders across defence, industry and research institutions.

PwC's ethos of solving important problems is pertinent to the current security environment. We hope this report contributes to the efforts of policymakers, industry and other institutions to maximise the opportunities under AUKUS and contributes to a peaceful and prosperous Indo-Pacific region.

# STRATEGIC CONTEXT

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**Strategic competition is escalating economic and military tensions in the Indo-Pacific. AUKUS has the potential to increase Australia's contribution to deescalating the risk of conflict and to the continued prosperity of the Indo-Pacific.**





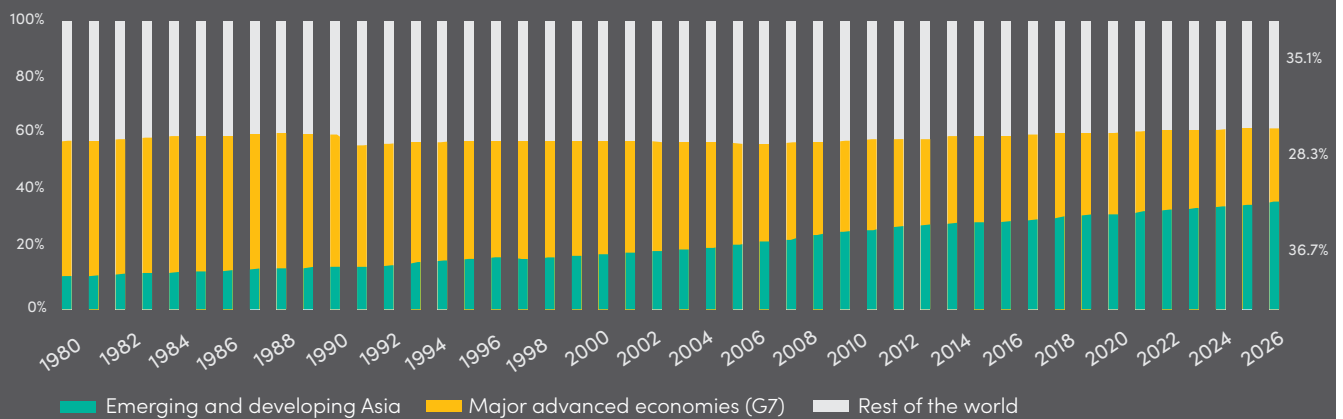
2.1

RELATIVE PEACE AND STABILITY HAS UNDERPINNED INDO-PACIFIC GROWTH

The Indo-Pacific region is undergoing significant economic and social change. Economic growth in the region has outpaced global growth (Figure 2), with the Indo-Pacific now accounting for 33 per cent of global economic output – increasing from less than nine per cent in 1980.<sup>4</sup> In the same period,

the People’s Republic of China (China), India and Indonesia have joined Japan among the world’s seven largest economies.<sup>5</sup> Strong fundamentals, including favourable demographics, expanding consumer markets and a maturing manufacturing base that attracts foreign investment have underpinned growth.

FIGURE 2: SHARE OF GLOBAL GDP, %



Source: IMF<sup>6</sup>

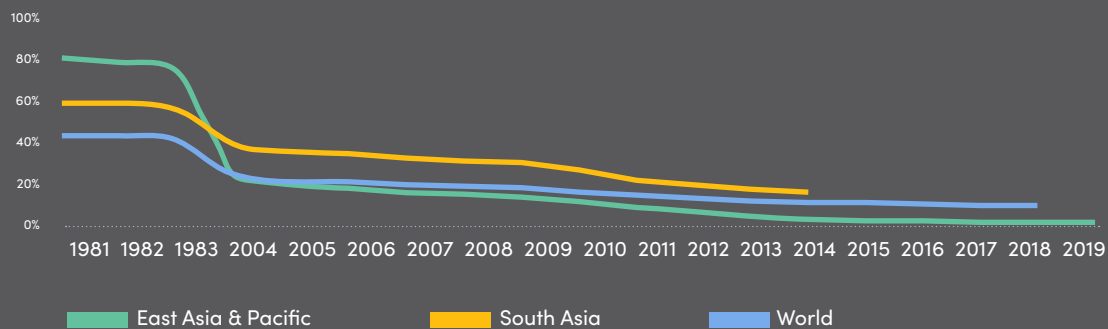
Looking forward, the Indo-Pacific’s growing working-age population, openness to foreign investment and continued urbanisation are sources for optimism. By 2030, Asia is expected to contribute roughly 60 per cent of global economic growth.<sup>7</sup> In the same period, the Asia-Pacific region will add more than two billion, or 90 per cent of new members, to the global middle class.<sup>8</sup>

This will drive new consumer profiles characterised by more buying power, a shift to premium and increased discernment over channels of consumption. For investors and businesses looking for growth opportunities in an increasingly uncertain world, the Indo-Pacific and Asia more broadly will be key drivers of growth and value.

## STRATEGIC COMPETITION ACROSS ECONOMIC AND MILITARY DOMAINS IS THREATENING GROWTH-CONDUCTIVE COOPERATION

The Indo-Pacific's prodigious growth has been underpinned by a cooperative environment. This has centred on the shared ideals of economic and political liberalism constituted by equality, open markets and security cooperation. Adherence to this 'rules-based international order' has supported rapid increases in per capita income and helped lift millions out of poverty (Figure 3).

FIGURE 3: POVERTY HEADCOUNT RATIO, % OF POPULATION



Note: Preliminary data for 2020 onwards suggests the global poverty rate at the US\$1.90-a-day poverty line has increased by one percentage point to 9.4 per cent. It is likely this trend is reflected in East Asia & Pacific and South Asia poverty figures.<sup>9</sup>

Source: World Bank<sup>10</sup>

### Rules-based international order

First coined after the Cold War, the term refers to the rules, norms and institutions that govern international relationships. The 2016 Defence White Paper defined it as:

*... a shared commitment by all countries to conduct their activities in accordance with agreed rules which evolve over time, such as international law and regional security arrangements.<sup>11</sup>*

Many scholars credit the rules-based international order with the promulgation of human rights, the rule of law, free trade and international cooperation globally. The rules-based international order was driven by the US in response to the tyranny in World War II and was further reinforced through the fall of the Soviet Union. The term rules-based international order has evolved to now entail cooperation through and with multilateral institutions, such as the United Nations, World Trade Organization (WTO) and World Health Organization (WHO).

Today, strategic competition in the Indo-Pacific is heating up. Prevailing economic and social rules and conventions, often referred to as the 'rules-based international order', and the prosperity they underpin are increasingly being challenged.

However, nuance is required when discussing change to the rules-based international order. These prevailing economic and social 'rules' continue to evolve over time. Every nation and state has the right to determine and advocate for their own interests, including changes to rules which they stand to directly benefit from. Any resistance to change should not be dogmatically rejected due to perceived strategic loss, but be carefully appraised against broader considerations of fairness, and possible economic and social outcomes. Only systems seen as fair, and therefore adhered to, are effective. This necessitates compromise and versatility over time.

The key players in the strategic competition currently being conducted within the Indo-Pacific are the US and China. This competition is occurring and accelerating across both economic and military fronts.

Economically, the US-led West's long-held dominance in setting and influencing international norms and standards is receding. The 'Beijing Consensus' can now be added to the 'Washington Consensus' and 'Brussels effect' as a guiding light for key multilateral agencies and is challenging western liberalism's historically prominent position. For example, China's exporting of technology standards through the 'Digital Silk Road' and increasingly prominent leadership roles in multilateral bodies are influencing the standards and norms of tomorrow.<sup>12</sup>

Simultaneously, the Indo-Pacific's military balance is changing. The US vision of maintaining regional freedom and openness contrasts in part with China's vision for regional integration and increased Chinese dependence and influence. The militarisation of the South China Sea, Sino-UK Treaty developments in Hong Kong, and nautical movements in the East China Sea and around Taiwan could all be viewed as testing the military balance of power.

Not only are geopolitical tensions rising, but they are rising at an ever-increasing rate. The 2020 Defence Strategic Update deemed the traditional ten-year strategic warning time as inappropriate, as regional military capabilities, grey-zone activities and cyber attacks grow in prominence.<sup>13</sup> This increased speed is due, in part, to technological innovations, which have shortened traditional warfare times, increased the impact of traditional warfare tactics, and enabled the use of novel tactics such as cyber attacks and cyber-enabled disinformation.

Recent developments have presented some cause for optimism. Speaking in October 2022, China's ambassador to Australia said both countries could 'move towards each other' after several tense years which saw escalating trade tensions.<sup>14</sup> This mirrored China's Foreign Minister's comments regarding the US at the outset of the Biden administration, stating 'China and the US should move towards each other while respecting each other's core interests.'<sup>15</sup>

The greatest threat to Indo-Pacific prosperity is the escalating strategic competition in the region and ultimately the risk of conflict. The cost of conflict is great, as has been evidenced in Eastern Europe during 2022. Recent estimates by the World Bank place the cost of reconstructing Ukrainian infrastructure as high as US\$349 billion.<sup>16</sup> Current conditions necessitate the strengthening of Australia's credible deterrence in the region – raising the cost to others of contemplated or actual conflict.

### **Indo-Pacific economic outlook: the forecast is bright, but policymakers must address emerging challenges to maximise the region's potential**

While the region is forecast to remain the fastest growing globally, there are emerging challenges Indo-Pacific policymakers must address to maintain the region's upward trajectory.

In the short term, the COVID 19 recovery requires active management. There is a dichotomy in vaccine access between the Indo-Pacific's advanced and emerging countries. This means some areas are increasingly normalising activity while others face resurgent infections and the associated economic and social impacts. The gap between advanced and emerging countries is widening and policymakers should act now before further inequity becomes entrenched.

Tightening US monetary policy to combat inflation could also weaken growth in the short term. The removal of highly accommodative global financial conditions could incentivise capital outflows from the region and result in higher borrowing costs, particularly for those with large debt levels.

In the medium to long term, the Indo-Pacific has five key policy imperatives.<sup>17</sup> If mishandled, these could be the source of significant headwinds. But if addressed, these present significant opportunities for the region to continue to grow and prosper.

- Advancing the digital economy to boost productivity, address cyber threats and maximise growth opportunities.
- Enabling regional enterprise growth through new services and export opportunities, and looking overseas for new sales opportunities.
- Rebalancing supply chains and fostering innovation in light of growing trade tensions, uncertainty and supply chain risks.
- Expanding and future-proofing the labour force to align with the industries of tomorrow, address skills gaps and reduce regional inequality.
- Building climate change resilience towards a net-zero future, including safeguarding against climate disasters, emissions and waste management in light of growing consumption and addressing food security concerns in developing countries.

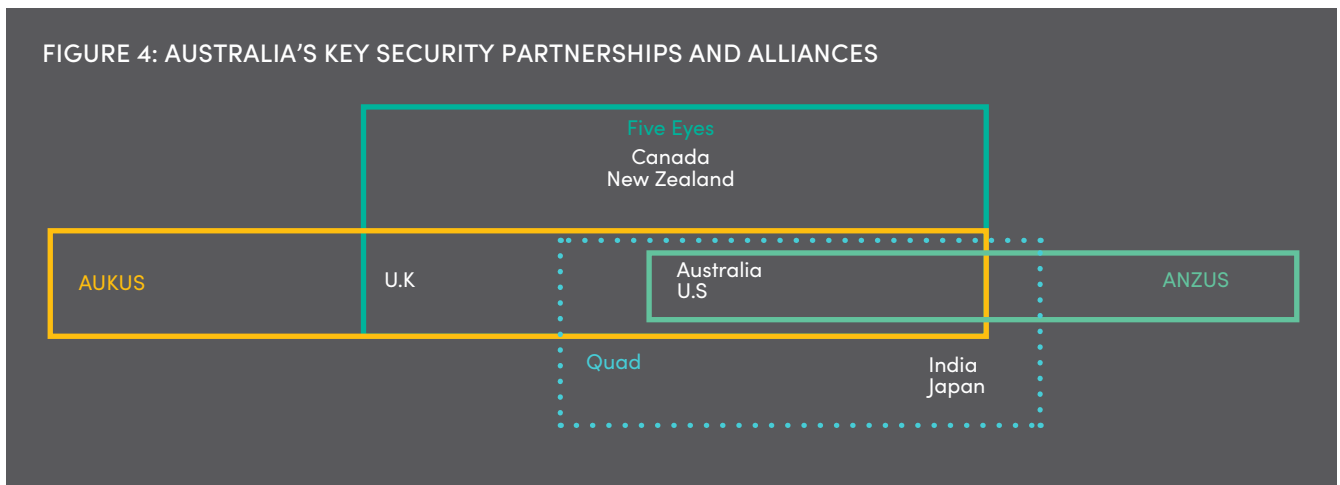
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**AUKUS WILL ENABLE AUSTRALIA TO ACQUIRE NUCLEAR-POWERED SUBMARINES AND ACCELERATE THE DEVELOPMENT AND DEPLOYMENT OF OTHER ADVANCED CAPABILITIES**

It was in the face of this rapidly evolving Indo-Pacific security environment, the leaders of Australia, the UK and the US jointly announced the AUKUS partnership on 16 September 2021.

The agreement reflects the three nations’ shared values and, importantly, an increased appetite to bolster and promote them. In some ways, AUKUS is a reinforcement of existing values and relationships, but it also brings a clear exigency to collaboration in the development of defence capabilities.

When defining AUKUS, it is important to note that it is a security, not a military, alliance. AUKUS is a deepening of the existing trilateral relationship and does not bind Australia to any formal legal, political or military obligations as Australia’s ANZUS Treaty with the US and New Zealand does. AUKUS builds on the deepest levels of military and intelligence capability sharing among the most trusted and closest of allies. It both streamlines and formalises what has long existed between the security and industrial bases of the UK, US and Australia. AUKUS complements existing military and intelligence pacts such as the Quad, Five Eyes and ANZUS (Figure 4).



Confirmation of how the AUKUS partnership compliments Australia’s defence alliances, as priorities continue to develop, is key. In the medium to long term, there is scope to explore coordination

across new domains and geographies. Natural areas for expansion could include space capabilities or the inclusion of like-minded Indo-Pacific nations.

# THE OPPORTUNITY FOR AUSTRALIA

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**AUKUS has the potential to improve regional security for Australia while simultaneously enhancing domestic economic outcomes, including building more resilient supply chains, growing the advanced manufacturing sector and exports, and enhancing technological innovation.**

AUKUS has the potential to strengthen Australia's sovereign defence capability – an essential component of Australia's contribution to regional security. AUKUS also presents a chance to simultaneously drive transformational change across Australia's economy. A stronger economy will help build influence and Australia's role as a bastion of democratic, neoliberal values in the Indo-Pacific.

Key economic changes that AUKUS can catalyse include:

- increasing the resilience of defence supply chains
- expanding Australia's advanced manufacturing sector and exports
- accelerating technological innovation.

### 3.1

## INCREASING THE RESILIENCE OF DEFENCE SUPPLY CHAINS

The decades following World War II saw a proliferation of multilateral organisations and alliances aimed at aligning interests for efficiency and social good: the North Atlantic Treaty Organization (NATO) for military and security affairs; the Organisation for Economic Co-operation and Development (OECD) and the World Bank for taxation, regulation and finance; and the WHO for health. Countries and companies that embraced the order created by these global efforts have seen prodigious growth.

At a company level, global integration has facilitated efficient changes such as shifts to single-source low-cost suppliers and just-in-time inventory management. At a whole-of-economy level, international trade efficiencies have resulted from exploiting comparative advantages – producing and exporting what is relatively cheap to produce and importing products that are relatively more expensive.

But heightened geopolitical tensions and a pandemic have combined to cause a sober revaluation of global supply chains and their risks. Waiting 12 weeks for a new car is an inconvenience – losing access to defence critical supply chains is impermissible. Bolstering supply chain resilience means seemingly less economically efficient decisions must be made, at the expense of enhancing national security through more robust supply chains.

While an entirely domestic defence sector would ensure national security operations remain under Australian control, this is a far-fetched panacea. The costs and complexities of defence supply chains renders this impossible. On the other hand, ignoring the current geopolitical environment could be ruinous in the event of a material challenge to Australian security and the country's access to supply chains. The balance required between these two extremes means the question for government is not 'if' but 'how' Australia will coordinate with other nations to maximise national interests.

Sometimes Australia can and should produce defence products domestically despite them being cheaper to procure overseas. While the extra expense may appear more costly, instead it reflects the inability of traditional economic metrics to capture the true value of products. The value of a domestic supply chain's ability to operate independent of foreign input should be reflected in commercial decisions. This value will not be visible in investment or economic growth values. In other instances, the most cost-effective and pertinent approach will be to continue to partner with the UK and US to innovate, manufacture and import to ultimately meet Australian Defence Force (ADF) requirements.

Markets will not naturally reach the balance required without intervention from government. AUKUS can contribute to supply chain resilience through three key channels:

- **Reduced dependence on individual suppliers:** whether domestic or foreign, having single-source suppliers for critical products or components is a high-risk strategy. AUKUS has the potential to reshape and integrate the three nations' industrial bases, giving Australia access to businesses and products which it would not otherwise.

As the three nations' industrial bases are increasingly integrated, new areas of complementarity, comparative advantages and capability will emerge. An assessment of how respective ecosystems can be leveraged for the maximum benefit of all nations would help maximise the impact of AUKUS. This assessment, alongside geographic risk diversification, could be used to determine how resources are allocated and where defence products are produced.

- **Increased ability to manufacture domestically:** AUKUS will support technology transfer, talent sharing and streamlined regulations, which will enhance Australian domestic manufacturing capabilities (see 3.2). By enhancing domestic capabilities across design, development and manufacturing stages, Australia will be able to expand the breadth and depth of domestic production and increase resilience by reducing critical inputs and products' international exposure.
- **Increased ability to stockpile critical products and inputs:** AUKUS broadens opportunities to stockpile by providing access to new inputs and products across the UK and US. For critical products where domestic manufacturing is prohibitively complex or costly, stockpiling is an efficient means to provide a buffer against inevitable supply chain disruption. AUKUS will involve a reassessment of the role of stockpiling in resilient defence supply chains. This would build on the 2020 Force Structure Plan which committed up to A\$1.1 billion to sovereign weapon-manufacturing capacity and A\$20.3 to A\$30.4 billion to weapon inventory surety between 2025 and 2040.<sup>18</sup>

AUKUS could also provide a platform for shared stockpiling arrangements. This provides the benefits of stockpiling and diversified sourcing simultaneously. Stockpiling does present the risks of unused stockpiles, significant cost and distorting markets natural pricing mechanisms. However, the current geopolitical environment means the marginal benefit of the strategic warehousing of defence assets, or goods essential to their operation and maintenance, is growing.

### The CHIPS and Science Act

On 9 August 2022, the US Congress passed the CHIPS and Science Act. The Act provides US\$280 billion (A\$410.6 billion) funding to build a domestic semiconductor industry, representing the largest investment in research and development in US history.<sup>19</sup> The shoring up of a domestic US semiconductor industry is a critical national security priority, with semiconductors the single most important technology underpinning leading-edge industries. Semiconductors are essential for the effective operation of 'everything from smartphones to nuclear submarines and from medical equipment to wireless communications'.<sup>20</sup>

The CHIPS Act presents significant opportunities for Australia and the AUKUS agreement more broadly. Australia has significant reserves of high-quality critical and rare earth minerals, which can provide the raw materials required for semiconductor production. These reserves offer significant economic and strategic opportunities, with the potential to support alliance supply chains and enhance Australia's sovereign capability.



In the last 10 years, Australia has experienced its slowest period of economic growth per person in at least six decades. Both output and income growth have been decelerating, even before accounting for the COVID-19 pandemic.<sup>21</sup> If pre-2011–12 growth had persisted, average incomes would have been about a tenth higher by the end of the last decade (approximately A\$11,500 per person in 2019–20).<sup>22</sup> These trends have been seen to some degree across most developed economies. The reasons for low growth are complex and the solution is equally multifaceted.

Reform is required across a range of policy domains, including industrial relations, tax and regulation. One sector with a key role to play in elevating Australia's productivity and household incomes is advanced manufacturing. Moving up manufacturing supply chains to produce increasingly complex, higher value products has long been linked with per capita economic growth.<sup>23</sup> There is also growing evidence that increased economic complexity is linked to positive equality and environmental outcomes.

### Australia's Economic Complexity Index<sup>24</sup>

#### What?

Created by Harvard University, the Economic Complexity Index (ECI) ranks countries based on the diversity and complexity of their export basket. High complexity countries are home to a range of sophisticated, specialised capabilities and are therefore able to produce a highly diversified set of complex products.

#### Why?

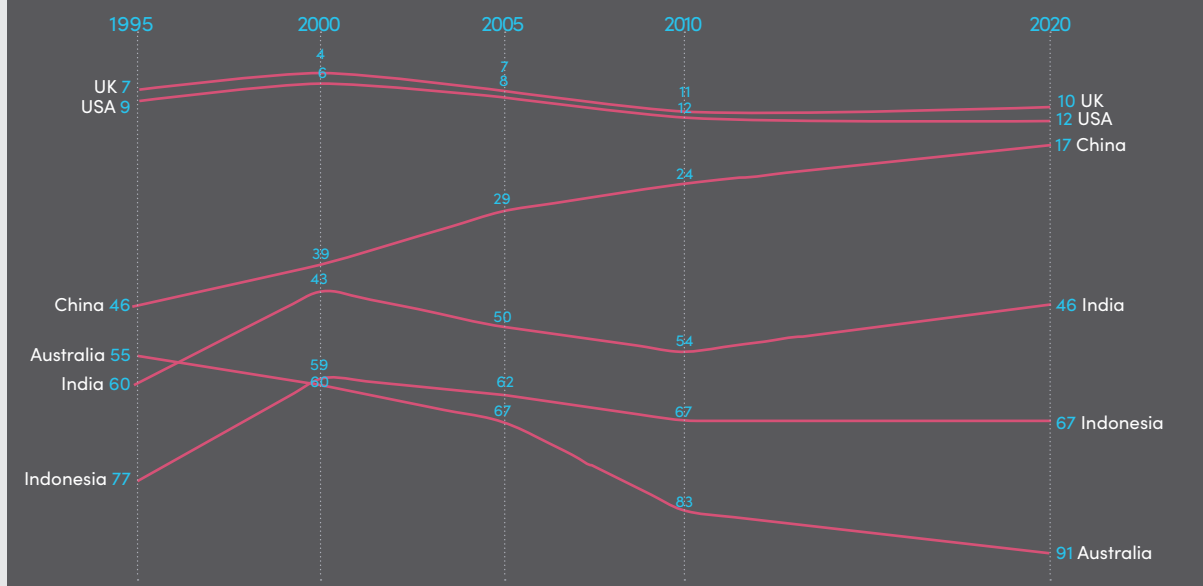
The ECI helps explain income differences across countries and predicts future growth. Countries whose exports are more complex than expected for their income level, tend to grow faster.

Growth can therefore be driven by a process of diversifying know-how to produce a broader and increasingly more complex set of goods and services.

#### Where does Australia rank?

Australia currently ranks 91st of 133 economies in terms of complexity, between Namibia and Kenya, despite being the world's ninth richest global economy on a per capita basis. This represents an eight-place decline over the past decade, continuing a steady decline since records began in 1995 (Figure 5). In contrast, many Southeast Asian countries have seen a sharp increase in complexity as their economies have outpaced global growth.

FIGURE 5: ECI RANKINGS, 1995–2020



Source: Growth Lab, Centre for International Development at Harvard University<sup>25</sup>



Around 47 per cent of Australia’s exports are in low complexity minerals. The good fortune of being a resource-abundant country should not be used as a critique. However, failing to maximise opportunities to diversify into new

and incrementally more complex products leaves potential growth untapped. In terms of new export product types, as shown in Table 1, Australia added just one between 2005 and 2020.

TABLE 1: NEW EXPORT PRODUCT TYPES BY COUNTRY, 2005–2020

COUNTRY	NEW PRODUCTS	USD PER CAPITA	USD (TOTAL VALUE)
Singapore	14	\$1.9k	\$10.8B
New Zealand	4	\$20	\$99.9M
Japan	3	\$1	\$97.7M
Australia	1	\$1	\$37.8M

Source: Growth Lab, Centre for International Development at Harvard University<sup>26</sup>

The Australian Government identified the critical role of advanced manufacturing in its National Reconstruction Fund and has committed A\$1 billion to support advanced manufacturing. The fund aims to:

*... give manufacturers access to capital to diversify their operations, industrial processes, and use research and development to climb the technological ladder... [and] to create new capabilities and opportunities to innovate in transport, defence, resources, agricultural and food processing, medical science, renewables and low emission technologies manufacturing.<sup>27</sup>*

Building on the National Reconstruction Fund, AUKUS has the potential to accelerate Australia’s advanced manufacturing activity and export growth. AUKUS can contribute through four key channels:

- **Technology transfer:** more comprehensive access to UK and US supply chains through AUKUS means Australian businesses can utilise a wider range of input and intermediary technologies. AUKUS also presents opportunities for integrated finance (for example, co-investment), design and production across the three nations. Gaining access to intellectual property and technology through these initiatives will aid Australia’s own advanced manufacturing capabilities.
- **Access to talent:** human capital is both a major enabler and constraint of advanced manufacturing capabilities. Acute talent shortages are being reported across the globe and the increased access to foreign talent that AUKUS can bring will enable knowledge transfer to Australia. To the extent immigration and education reforms are implemented in support of AUKUS, Australia’s talent pool could be further deepened.

- **Streamlined regulation:** AUKUS’ success is predicated on the removal of ‘red tape’ and reform across a range of regulatory areas, impacting advanced manufacturing. This includes immigration, export controls, culture, risk and procurement. To the extent industry resources can be diverted from regulatory compliance issues and towards innovation and production, AUKUS can bolster advanced manufacturing productivity and output.
- **Access to export markets:** Australia comprises 4 per cent of total defence expenditure across AUKUS nations.<sup>28</sup> The integration of industrial bases and increased access to UK and US markets, that can be achieved through AUKUS, presents significant export opportunities for Australian businesses. These significantly larger markets present new opportunities for Australian businesses to sell, and produce at scale and reap cost efficiencies, to new foreign buyers.

Australian defence exports currently total around A\$2 billion annually.<sup>29</sup> This value can and should grow under AUKUS. The latent potential in Australian small and medium-sized enterprises (SMEs) can be drawn on to support defence requirements and move up the value chain as AUKUS-related intellectual property and talent are unlocked. Australia’s Defence Industry Minister, Pat Conroy, expects opportunities for Australian SMEs to export to the UK and US will begin to open up in 2023, noting ‘exporting to our allies, and supporting the capability of like-minded countries, strengthens our relationships and our ability to shape and influence our strategic environment.’<sup>30</sup>

## Export markets

### Defence export markets:

#### Global

Defence spending is big business. In 2021, combined military expenditure of the UK, US and Australia was US\$901.2 billion, of which the US comprised the lion's share (US\$801b). The three nations spent the equivalent of 2.2, 3.5 and 2.0 per cent of GDP on defence, respectively. In Australia, defence spending is expected to rise from 2.0 to 2.5 per cent of GDP, which would see expenditure reach A\$50 billion a year in today's dollars. This is largely driven by the proposed SSN program. While projecting costs at this early stage of the process is fraught with hazard, estimates by the Australian Strategic Policy Institute (ASPI) assume a minimum cost of over A\$116 billion to acquire SSNs.

As shown in Table 2, Australia has been the world's 16th largest arms exporter over the last five years (large export contracts can significantly affect annual totals so a five-year period is reported). Arms imports rose by 62 per cent between 2012–16 and 2017–21, to make Australia the fourth largest importer globally. It is important to note this and subsequent data in Table 1 encompasses 'major weapons' only, and therefore does not account for services, technology and other defence inputs produced in Australia – key areas of focus for AUKUS.

The main recipient region of arms exports in 2017–21 was Asia and Oceania (43 per cent of global arms imports), followed by the Middle East (32 per cent), Europe (13 per cent), Africa (5.8 per cent) and the Americas (5.5 per cent).

TABLE 2: TOP FIVE EXPORTERS AND IMPORTERS OF DEFENCE PRODUCTS GLOBALLY, 2017-2021

Importers	Global share (%)	Exporters	Global share (%)
1. India	11.3	1. US	38.6
2. Saudi Arabia	11.0	2. Russia	18.6
3. Egypt	5.8	3. France	10.7
4. Australia	5.4	4. China	4.6
5. China	4.8	5. Germany	4.5
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12. UK	2.5	7. UK	2.9
13. US	2.4	---	---
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Source: Stockholm International Peace Research Institute<sup>35</sup>

#### United Kingdom

The UK supplied 2.9 per cent of global arms exports in 2017–21. A significant fall in exports occurred in this period due to the last delivery of combat aircraft to Saudi Arabia in 2017. The US (77 per cent), South Korea (16 per cent) and Germany (3.2 per cent) were the main suppliers of exports to the UK.

#### United States

The US provided 39 per cent of arms exports globally in 2017–21, up from 32 per cent in the preceding five years.

Aircraft comprised a majority of these exports (62 per cent), followed by missiles (17 per cent) and armoured vehicles (10 per cent). The US exports arms to significantly more recipients than any other nation (103 states) primarily across the Middle East (43 per cent), Asia and Oceania (21 per cent) and Europe (18 per cent). Growth in arms exports was primarily fuelled by the United States' top four export destinations of Saudi Arabia, Australia, South Korea and Japan. Looking forward, the US pipeline includes scheduled deliveries of 600 F-35 combat aircraft and another 278 new aircraft.

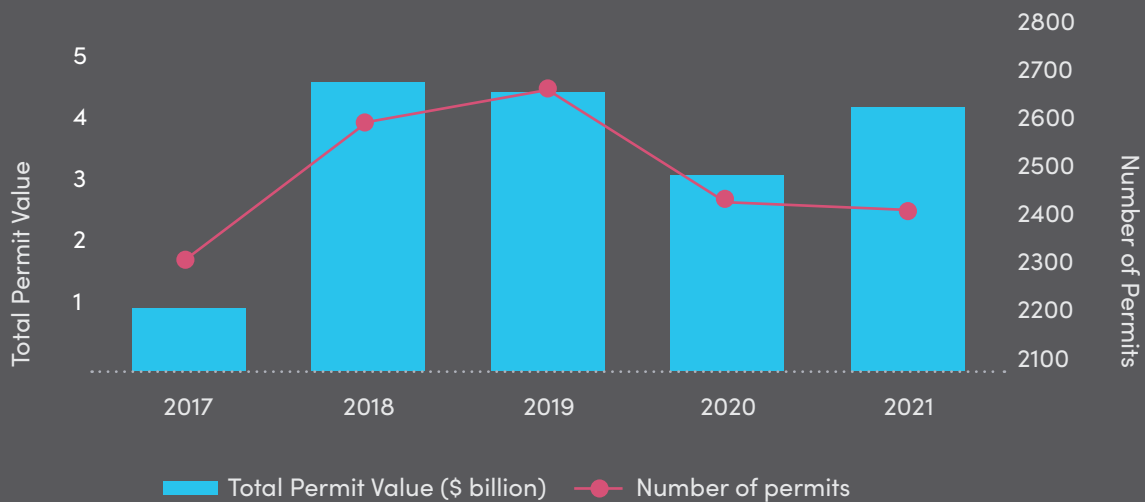
### Australia

Australia climbed to be the fourth largest importer by increasing imports by over 60 per cent between 2012–16 and 2017–21. The largest sources were the US (67 per cent), Spain (24 per cent) and Switzerland (3.3 per cent). These imports consisted primarily of 50 combat aircraft and 11 anti-submarine aircraft from the US and three destroyers from Spain. Notably, the UK did not feature on Australia’s import list for the period 2017–21. Looking forward, Australia does have several large orders

pending delivery, none larger than the SSNs under AUKUS, subject to finalising arrangements.

As shown in Figure 6, Defence issued almost 2,500 export permits in 2021 for military goods valued at approximately A\$4.3 billion (noting value is an optional field for exporters applying for a permit, and the fact that this includes military-grade items that were exported for non-military end uses as well as items sent overseas for repair returning to Australia).<sup>36</sup>

FIGURE 6: DEFENCE EXPORT PERMITS FOR MILITARY GOODS, VALUE AND NUMBER, 2018–21



Source: Australia Government Defence<sup>37</sup>

Prominent examples of defence exports from Australia include:

- Joint Strike Fighter Program: A\$1.7 billion in contracts is shared among more than 50 companies as part of the global Joint Strike Fighter Program.<sup>38</sup>
- Thales Australia Bushmaster: As of 2020, 171 Thales Australia Bushmaster Protected Mobility Vehicles had been exported for use across seven countries including the UK, Netherlands, Fiji, Japan, Jamaica, Indonesia and New Zealand.<sup>39</sup>
- Austal Cape-Class Patrol Boat: In 2021, the Trinidad and Tobago Coast Guard took delivery of two Cape-Class Patrol Boats from Austal Australia, the first exports of the best in class patrol boats.<sup>40</sup>

### Advanced manufacturing:

Manufacturing is an important sector for Australia's economy, employing one in every 16 workers.<sup>41</sup> Specifically, advanced manufacturing is one of Australia's fastest growing export sectors and accounts for approximately 50 per cent of Australia's more than A\$100 billion manufacturing output. In 2020, Australia's advanced manufacturing exports totalled A\$33.2 billion.<sup>42</sup>

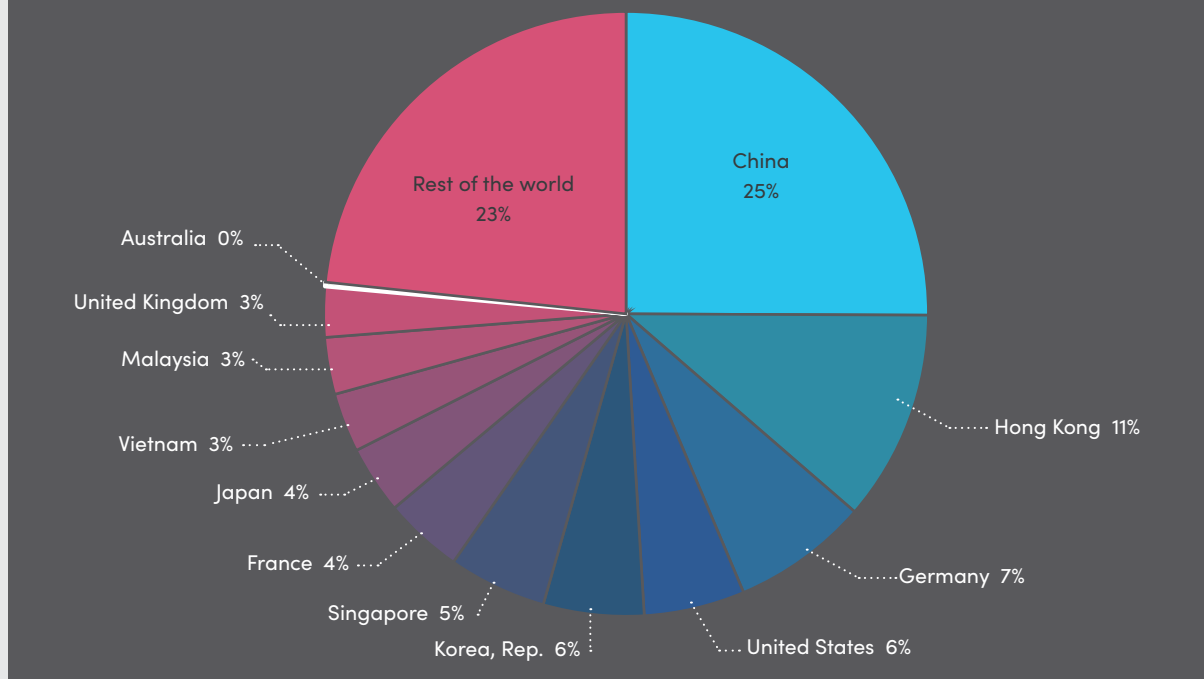
This activity is supported and made possible by a strong ecosystem encompassing:

- large international companies, including BAE Systems, Boeing, Lockheed Martin, Northrop Grumman, Raytheon, Rheinmetall and Thales, supported by innovative SMEs across Australia
- world-class research institutions including the Commonwealth Science Industry Research Organisation (CSIRO) and leading universities
- support and incentives including the Research and Development Tax Incentive and the National Reconstruction Fund.

However, there is room for improvement and for Australia to play a more prominent role in the global export market. In 2019, global high technology exports totalled more than more than US\$2.85 trillion (high technology exports are defined as products with high research and development (R&D) intensity, such as aerospace, computers, scientific instruments and electrical machinery). Of this, Australia contributed US\$6.3 billion, or 0.22 per cent (Figure 7). This placed Australia 34th of 148 economies globally, behind the leaders China (25 per cent), Hong Kong (11 per cent), Germany (7.3 per cent), and the US (5.4 per cent). The UK placed 13th with 2.7 per cent.<sup>43</sup>

The size of the prize for exporters is large. For every 0.01 per cent Australia can lift its market share, high technology exporters would see an increase in exports of more than US\$285 million at 2019 levels.

FIGURE 7: GLOBAL HIGH TECHNOLOGY EXPORT MARKET, 2019



Source: World Bank<sup>44</sup>

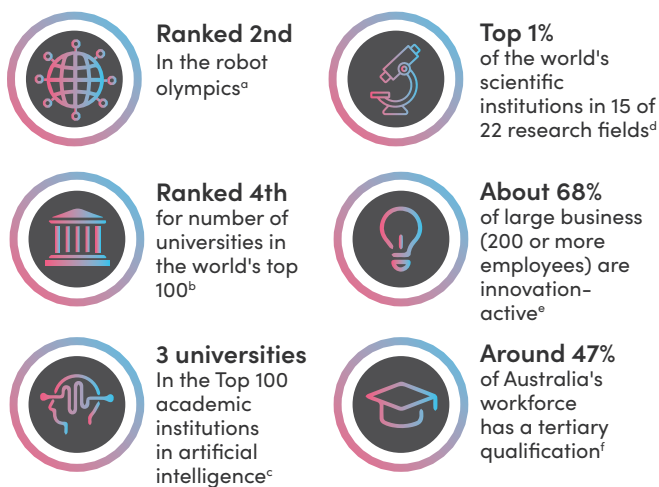
Additional advanced manufacturing activity would also benefit Australia's workforce through increased job quality. In alignment with the 2022 Jobs and Skills Summit's ambition to deliver a high-quality labour force through skills, training and migration, advanced manufacturing jobs are generally associated with higher levels of quality.<sup>45</sup>

Job quality encompasses satisfaction with the nature of the tasks undertaken, social support, a sense of purpose and wellbeing, and can have positive flow-on effects for productivity, labour force participation rates and social outcomes.

AUKUS presents a unique opportunity to drive innovation directly across the defence ecosystem and indirectly through the broader civilian science, technology and manufacturing industries.

As highlighted by Figure 8, Australia has a strong foundation to build on. The A\$167 billion technology sector is the third largest contributor (8.5 per cent) to GDP and has grown 26 per cent since the start of the COVID-19 pandemic. Approximately 98 per cent of Australian technology firms are SMEs, supported by a strong skilled workforce with no less than 70 per cent of the workforce holding an advanced diploma or a higher qualification in a critical sector.<sup>46</sup>

FIGURE 8: AUSTRALIA'S INNOVATION CREDENTIALS<sup>47</sup>



However, there is room for improvement. Domestic R&D equivalent to 1.8 per cent of GDP remains well below the OECD average of 2.5 per cent.<sup>48</sup> When ranked globally, Australia sits 37th in terms of knowledge and technology outputs despite being the 14th largest economy in terms of nominal GDP.<sup>49</sup> This disparity reflects relatively poor commercialisation rates – the conversion of research knowledge to industry impacts. In 2020, 9.1 per cent of goods and services innovations were new to the world in comparison to 72.3 per cent of innovations that were new to the business only.<sup>50</sup> A focus on domestic modifications which limit interoperability and interchangeability is a limiting factor to innovating with higher degrees of novelty.

AUKUS can contribute to innovation through two key channels:

- **Competitive pressures via access to UK and US industrial bases:** Technology, markets, regulation and firm-specific characteristics are key determinants of the level of innovation in an ecosystem. AUKUS has the potential to expose Australia to a range of new technologies, markets and companies while regulations are streamlined.

This means Australia's defence ecosystem will benefit from access to new capabilities which otherwise could not have been designed or manufactured.

These new capabilities should reinforce innovation incentives in AUKUS industrial bases. Defence procurement will more readily be able to substitute products for alternatives, incentivising companies to innovate to maintain or expand market share. At a whole of system level, this will make procuring capabilities more efficient.

Opening up supply chains under AUKUS is a three-way street. While Australian businesses will find new export markets, UK and US companies may find similar opportunities in Australia. This will expose domestic firms to greater competitive pressure, creating new incentives to improve productivity to remain competitive with foreign alternatives. This could also accelerate the shift from traditional infrastructure towards advanced capabilities. The US in particular is a hotbed of technological innovation (ranked first in the world for a range of innovation metrics including number of patents, software spending and corporate R&D investment) and Australian access will likely see the proportion of defence spend on advanced capabilities grow.<sup>51</sup>

Higher levels of inter-AUKUS trade has productivity ramifications beyond those at a company level. With consideration for the entire domestic ecosystem, increased competitive pressures will incentivise a reallocation of resources between industry and defence stakeholders towards the most productive – driving productivity and innovation.<sup>52</sup>

- **Dual-use innovations and indirect economic effects:** Defence is often at the cutting edge of technical innovation and can act as a seedbed of knowledge for the transfer of human and technological capital to non-defence applications. This 'dual-use' across military and civilian applications means innovation in the defence sector can reverberate positively throughout the economy. Artificial intelligence, cyber and quantum technologies are as applicable to warfare as they are for enhancing supply chain efficiencies, protecting customer data and medical imaging. The Australian Government is currently undertaking a review of the 'List of critical technologies in the national interest' and has identified the importance of creating a link to AUKUS-related technologies.<sup>53</sup>

Burgeoning innovation will flow through to broader productivity and economic outcomes. A stronger, more resilient economy can be a strategic advantage in and of itself. Economic and political prowess is a firm foundation for military success. While advanced capabilities can and should be utilised more effectively in the short term, the true potential of AUKUS lies in developing more resilient, innovative economies with dynamic industrial bases in the long term.

# DELIVERING AUKUS EFFECTIVELY

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The AUKUS partnership has the potential to catalyse both national security and economic benefits across Australia. These can be realised by changing the way our governments, industry and institutions work together to deliver defence capabilities.

So, what are the next steps for government to enable AUKUS' success? How can the partnership assist Australian industry in unlocking opportunities? What role do research institutions have to play?

This chapter presents insights (as summarised in Figure 9) and lists points for discussion gathered through consultation with stakeholders across defence, industry and academia. The purpose of reporting these is to contribute to the public discourse and ultimately help inform stakeholders on how AUKUS could be delivered effectively and to maximise opportunities for Australia.

FIGURE 9: CONSULTATION INSIGHTS



Source: PwC primary research based on consultations conducted March–October 2022.

Australia has a highly educated and skilled workforce: around ten per cent of Australia's 11.5 million workers hold a vocational education and training (STEM) qualification, and six per cent hold a university level STEM degree.<sup>54</sup> However, growth in demand for these skills is outpacing supply. In June 2022, 31 per cent of Australian business reported difficulty in finding suitable staff to fill jobs.<sup>55</sup> The AUKUS partnership could put Australia's skilled workforce under further strain.

#### 4.1.1 INSIGHTS

##### 1. Workforce planning on a national scale could alleviate skills gaps

Historically, Australia has relied on immigration to plug STEM gaps.<sup>56</sup> Due to security constraints, only a fraction of this talent is available to defence. The success of AUKUS for Australia will depend on Australia's ability to fill skills gaps across nuclear and advanced technological fields. Australia also needs to mobilise its highly educated and skilled workforce in the 'smart', higher value-added work occurring across the AUKUS global supply chain. A targeted, national approach to workforce planning could help address these issues.

In September 2022, the government launched the Jobs and Skills Summit to work constructively on the challenges and opportunities facing the labour market and the economy. Outcomes included the A\$1 billion National Skills Agreement to be delivered in 2023, and longer-term commitments including discussion of a five-year National Skills Agreement and exploring apprenticeship support systems.<sup>57</sup> Specifically for defence, the Australian and South Australian governments have agreed to co-chair a South Australia Defence Industry Workforce and Skills Taskforce to 'support delivery of Australia's defence capabilities, including critical maritime capabilities such as frigates and submarines'. These actions would be complemented by expansion to include the development of a nationwide, AUKUS-specific plan – as is warranted by the unique nature and growth opportunities of the partnership.

Any national AUKUS workforce planning requires specificity. Within the AUKUS partnership, priority capabilities have already been identified. To date, eight areas of advanced technology collaboration have been announced: cyber capabilities, artificial intelligence, quantum technologies, undersea capabilities, hypersonic capabilities, electronic warfare, innovation, and information sharing.

However, in the current competitive environment, greater specificity could help governments work across the education sector and Defence to plan and manage future requirements. Investment is needed to fund education, provide training and incentivise our workforce to learn, maintain and develop AUKUS-related skillsets (including immigration). Innovative investments, including Defence-funded scholarship programs, cadetships, secondments and on-the-job training would complement traditional, classroom-based learning.

A lack of certainty is particularly insidious for SMEs, where (unlike the defence 'primes': the seven multinational defence companies) defence contracts often represent only a small proportion of their commercial output. For example, a SME engaged under a prime to contribute a component to an overall material procurement objective, will be subject to the prime's manufacturing schedule. This schedule can often span multiple years, involving only sporadic input from the SME. In practical terms, this creates a 'tools up, tools down' pattern that has other flow-on impacts such as quality control. The SME cannot count on long-term engagement through sustainment as these are usually contracted separately and sustainment is often regulated through Original Equipment Manufacturer conditions. As and when advanced technologies such as AI and quantum computing become more prominent in defence budgets, the issue of providing greater certainty to SMEs in the manufacturing schedule will likely grow in importance.

Work towards building an AUKUS-supporting workforce is being done by the Navy through the establishment of the Naval Shipbuilding Plan (2017) and Naval Shipbuilding College (established in 2018). However, the forecast procurement of the SSN classification necessitates an update to the plan and it is understood initial work on education pathways by the Nuclear-Powered Submarine Taskforce is underway.

Defence outcomes should be weighed against other competing national priorities in any national workforce planning. However, there are likely significant areas of overlap between defence and non-defence labour force requirements, particularly in advanced manufacturing.



### QuintessenceLabs case study

Canberra's QuintessenceLabs (QLabs) is a quantum cybersecurity solution provider. The company has developed the world's fastest quantum random number generators and also specialises in crypto-agile key management, data security policy enforcement and second-generation quantum key generation.

These technologies have numerous defence and non-defence applications. QLabs has been selected as a World Economic Forum Technology Pioneer, was awarded a UK Department for International Trade Tech Rocketship Award, and has secured In-Q-Tel funding. The company has a broad client case spread globally that includes the US Defense Advanced Research Projects Agency (DARPA) and the US Department of Homeland Security.

## 2. Reforming Australia's working visa programs would complement national skill building activities

Australia is experiencing an acute talent shortage and people, not investment, is the limiting factor. In an environment where sectors are competing for people and skills, and as advanced technologies grow in prominence, existing immigration procedures are increasingly not keeping up with demand. For example, the traditional approach of matching a job description to an occupation is outdated and not conducive to current workforce evolution. This is particularly relevant for stereotypically 'non-defence' firms where advanced technology talents often have multiple applications across several industries at once. An increase in highly skilled, defence-related immigration should be complementary to national skill building activities.

## 3. A collaborative approach to talent could be mutually beneficial to AUKUS nations

In addition to immigration processes, most individuals require a security clearance to work with Defence. The Australian Government Security Vetting Agency (AGSVA) is responsible for issuing these clearances which range from Baseline to Negative Vetting Level 1, Negative Vetting Level 2 and Positive Vetting.

While all clearance processes require time and effort, there are significant hurdles that reduce industry's ability to utilise its personnel across borders, especially when it comes to clearing personnel who are not Australian citizens. For example, generally, UK or US industry specialists relocating to Australia are unable to work on defence projects until they become a citizen and obtain clearance – often a three- to four-year process, subject to few exceptions. For the clearance to remain valid, the person must remain sponsored by a specific approved project. This presents a significant restriction on the free flow of talent between defence projects.

Domestic talent mobility constraints could be lessened through the implementation of an AUKUS clearance and systems access regime. This system could allow team members, including those who are civilians working for their respective government public service, to access each other's AUKUS-related systems, get access to the required information and participate in AUKUS-related activities. If successful, such a regime could be expanded beyond AUKUS-related projects to further ease the shortage of talent across the defence ecosystem.

The AUKUS partnership may present an opportunity to consider pooling resources and skills. Under AUKUS, there is a risk that Australia, the UK and the US will be competing for the same people. The partnership could look for opportunities that align with national interests, to collaborate and optimise outcomes for all AUKUS partners. A truly collective approach to sharing resources could even include a three-way visa to pool resources across AUKUS nations.<sup>58</sup> Balancing national security with flexibility is never an easy task, though AUKUS (combined with the geopolitical environment) would point to the need for some pragmatism in the collaboration.

### Marine Rotational Force – Darwin Case Study

The Marine Rotational Force–Darwin (MRF–D) program enables US Marines and their equipment to rotate through northern Australia and undertake training activities with the ADF and other regional partners during the dry season.<sup>59</sup>

Launched in 2012 with a first rotation of 200 Marines, the MRF–D has since grown in both size and complexity, reaching 2,500 Marines by 2019. During 2020, a modified MRF–D was deployed involving a reduced number of 1,200 Marines as some key activities were impacted by COVID–19 to ensure strict safety measures. In 2021 and 2022, this number was increased to be once again close to the pre–COVID–19 level, with 2,200 Marines participating in the teaming and training with the Australian Army.

The MRF–D conduct a range of activities that challenge their force composition and the range of equipment they bring. The rotation brings new capabilities to the program each year, such as the field hospital and medical (surgical, radiology and laboratory) equipment, low–altitude air defence detachment exercises and unmanned air vehicles in 2021; and other humanitarian assistance, security operations and high–end live–fire exercises in 2022.

MRF–D exercises conducted to date include:

- Exercise Koolendong: MRF–D’s major annual bilateral warfighting exercise.
- Exercise Carabaroo: a trilateral urban operations activity involving the MRF–D, Armed Forces of the Philippines and the ADF.
- Exercise Crocodile Response: a new humanitarian assistance and disaster relief activity.
- Exercise Southern Jackaroo: an Australian Army–led two–week trilateral ground exercise involving participants from Japan and the US.
- Exercise Talisman Sabre: the principal Australia–US bilateral military training activity. It is conducted every two years and focuses on mid–intensity, high–end warfighting.<sup>60</sup>

In the 2021 Australia–United States Ministerial Consultations (AUSMIN), Australia and the US announced plans to further enhance the US force posture cooperation in Australia. These further cooperation exercises span integrated logistics capability, existing enhanced air cooperation, maritime sustainment cooperation, and evolving bilateral and multilateral operations and exercises.<sup>61</sup>

#### 4.1.2 POINTS FOR DISCUSSION

1. Joint National Workforce Planning: a plan which combines education and practical learning to plug future talent gaps across AUKUS capabilities. This could involve workforce planning at an enterprise level to ensure defence stakeholders (e.g. Navy, Defence Industry and APS) are not competing for resources in a way which undermines the Defence system.
2. An ‘AUKUS visa’: a visa that facilitates the movement of US and UK citizens to Australia. As a first step, Australia could reciprocate the E3 visa arrangement with the US to ease AUKUS supply chain talent constraints.
3. Australia’s Migration Program Planning Levels: a reassessment of the appropriateness of current and future levels given projected AUKUS workforce gaps. An expedited pathway for AUKUS–related skills could also be explored.
4. Expedited defence industry clearances: an accelerated process where individuals who have been vetted in the UK and US could be considered for Australian defence industry clearance, regardless of Australian citizenship.

This section focuses on views regarding US export controls and their ramifications on technology transfers. While the UK's 'managed industry' approach to defence has its own limitations, feedback overwhelming pointed to US controls as more costly, laborious and ultimately non-conducive to AUKUS's aim of free-flowing cross-border technology transfer.

The US export controls environment comprises various regulations and programs, however the overwhelming view from consultation was that the US International Traffic in Arms Regulations are particularly burdensome and inconsistent with the objectives of technology acceleration through AUKUS.

### Overview of the US National Technology and Industrial Base and International Traffic in Arms Regulations

#### What is the 'NTIB'?

The National Technology and Industrial Base (NTIB) consists of 'the people and organisations engaged in national security and dual-use R&D, production, maintenance, and related activities within the US, Canada, the UK, and Australia.'<sup>62</sup>

Established in 1993 after the Cold War, the NTIB was Congress' response to fears of the Department of Defence not undertaking serious technology and industrial base planning. The NTIB formalised the traditionally close US-Canada defence relationship and was subsequently expanded to include the UK and Australia in 2017.

The NTIB's stated purpose is to 'support national security objectives of the US, including supplying military operations; conducting advanced R&D and systems development to ensure technological superiority of the U.S. Armed Forces; securing reliable sources of critical materials; and developing industrial preparedness to support operations in wartime or during a national emergency.'<sup>63</sup>

The NTIB Council, consisting of Secretaries of Defence, Energy, Commerce and Labor, and other officials, is responsible for driving interagency cooperation and advising the US President.

The practical focus area for the NTIB was to reduce barriers to closer industrial base collaboration between the US, UK, Australia and Canada. US export controls, specifically the International Traffic in Arms Regulations (ITAR), was one of the key barriers identified.

#### Where does 'ITAR' fit in?

The ITAR was established to regulate the export of defence-related articles that could jeopardise US national security or foreign policy interests.

Specifically, the ITAR regulates the licensing of exports and transfers of articles, technology and services listed on the US Munitions List. This includes a range of articles including firearms, ground vehicles, military electronics, as well as services and technology (software, data) related to those articles. The ITAR is administered by the State Department, similar to the Foreign Military Sales program which regulates US Government to foreign government defence exports.

Of the NTIB countries, only Canada has effective preferential treatment under the ITAR. It allows for permanent and temporary exports of unclassified ITAR articles to Canada as well as in country re-transfers of ITAR articles. While Australia and the UK have their respective US defence trade cooperation treaties which arise as an exemption under the ITAR, in application these treaties are too restrictive to be substantially effective for either jurisdiction. This contrasts with the Canada ITAR exemption, which appears to have been more effective in facilitating streamlined trade cooperation with the US.

Under the ITAR, export authorisations can take the form of:

- export licences (most commonly a Department of State Publication No.5 (DSP-5), authorising exports to a foreign person
- warehouse and distribution agreements, facilitating warehousing and distribution of articles to be subsequently distributed to an approved sales territory
- Technical Assistance Agreements (TAAs) to authorise US providers to supply defence services to a foreign person.
- Manufacturing License Agreements (MLAs) to authorise US manufacturers to share manufacturing expertise with a foreign person.

## 4.2.1 INSIGHTS

### 1. ITAR reform is a critical component to holistic NTIB integration

The NTIB, expanded to include Australia and the UK in 2017, grows the industrial base from which the US and other member nations can draw from. The effectiveness of the NTIB has been questioned, with particular concerns regarding domestic sourcing requirements, the use of small business set-asides and export controls. There was broad consensus in the consultation that the NTIB has largely failed in its aim and the ITAR have proven to be the most significant hurdle.

Specifically, the ITAR considers ‘the end-user [as] inconsequential to [the] classification’ of products, meaning ITAR often leaves no space for exemptions or expedited processes for NTIB members. This means the UK and Australia are largely treated on an equivalent basis to non-NTIB countries.<sup>65</sup>

This is the case, even though there are some ITAR exemptions which recognise Australia’s and the UK’s place as US defence trade partners of choice. For example, both Australia and the UK have ITAR exemptions which make provision for cross-border defence articles trade under respective defence trade cooperation treaties. Despite these treaties being in place to facilitate trade outside of the ITAR for Australia and the UK, their implementation arrangements are restrictive and both industry and government often choose not to use them.

In addition, the ITAR provide an exemption from its standard dual national re-export requirements for Australian and EU (formerly including UK) persons at 126.18(d). However, this has limited practical benefit as it is restricted to unclassified ITAR articles and specific employment conditions. In addition, it creates administrative complexity because it does not sufficiently recognise the cultural diversity of the industrial base workforces of both Australia and the UK.

### 2. ITAR presents a finance and resource intensive compliance burden

The US Congress has acknowledged that ‘aspects of the US export control system have long been criticised by exporters, non-proliferation advocates, allies and other stakeholders as being too rigorous, insufficiently rigorous, cumbersome, obsolete, inefficient or combination of these.’<sup>66</sup> The US Government ‘strongly advises’ exporters implement internal export compliance programs, which inevitably leads to a significant cost in terms of time and resources.<sup>67</sup>

*Remaining up to date on regulation, compliance costs and keeping my teams resourced during licensing delays increases the cost of business by 25 per cent – costing time and money.*  
– Defence industry representative

The cost of non-compliance is steep. Penalties for ITAR infractions range from up to US\$1 million for civil violations and up to US\$1 million or twenty years imprisonment per wilful violation.<sup>68</sup>

The US has recently released two Other General Licenses (OGLs) for sustainment and maintenance in a one-year pilot program designed to trial a simplified ITAR qualification process. This demonstrates a recognition of the ITAR’s complexity and a willingness to reform the system – an encouraging sign and a positive indicator for AUKUS.

### 3. ITAR’s treatment of intellectual property excessively disincentivises cross-border R&D

ITAR’s compliance burden is not just intensive but is also far-reaching. Where any intellectual property or products are classified under ITAR and used at any stage of R&D, the technology is subject to US defense export controls permanently.<sup>69</sup>

This creates a trade-off for companies contemplating collaborating with US entities. While the US presents the largest export opportunities for defence products, this short-term export revenue must be weighed against the long-term value of losing control of intellectual property. If the US, UK and Australia can reach agreement on the common treatment of IP in a way which fairly reflects each country’s relative contribution, this would go some way to alleviating ITAR concerns.

## 4.2.2 POINTS FOR DISCUSSION

1. An 'AUKUS Office': a tripartite agency to move Australia, UK and US entities away from individualised, complex and relatively costly bilateral export authorisations towards a framework driven environment. The AUKUS Office could set trade facilitation principles under which initiatives that support the purpose of AUKUS can be accelerated.

The AUKUS office could work on an application-by-application basis. Utilising AUKUS priorities and with representatives of eligible technology collaboration initiatives, applications could be made to develop fit for purpose trade facilitation plans, with speed, which stand outside traditional export control regulations and mechanisms. It is vital that any additional processes are more efficient and in replacement of, not in addition to, existing processes.

Three key questions should be answered when developing any proposed AUKUS Office.

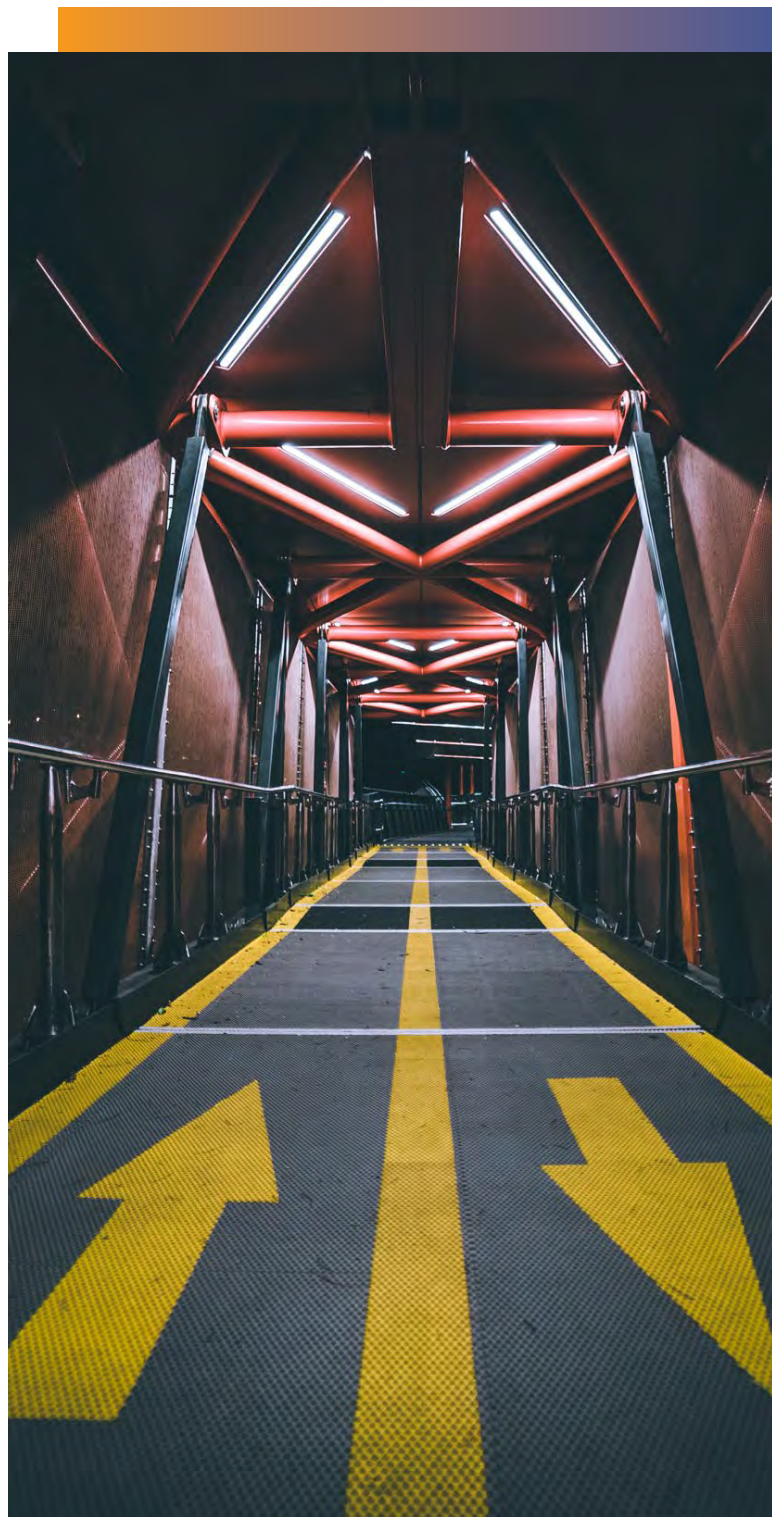
- What is the scope? For example, is it limited to AU, UK and US industrial base collaboration activities directly supporting AUKUS, or will it consider broader applications that indirectly support outcomes.
- What technology readiness levels (if any) will the office target or consider? In doing so, there should be consideration as to how best to leverage innovation platforms across the Australia, UK and US to set the strategic intent and technology priorities as well as identify and ultimately pull through ideas that start in these platforms. For example, structuring pathways from the Australian Department of Defence's Next Generation Technologies Fund and Innovation Hub into the AUKUS office to plan and set the defence trade collaboration rules for the lifetime of the technology.
- Should the AUKUS office consider retrospective application of AUKUS Trade Facilitation Plans for eligible technologies? If retrospective application is permitted, eligibility, scope and practical implementation should be clearly defined at the outset to avoid confusion.

The US political appetite for such an office may only exist if there were sufficient assurances and control layers in place to ensure the technology acceleration vision of AUKUS is appropriately balanced with the non-proliferation and security purpose of export controls. Identifying an appropriate balance will require widespread consultation and subsequent lobbying at the highest levels, including US Congress with its responsibility for legislative amendment and historical opposition to ITAR amendments perceived as weakening the US export controls regime. Ultimately, assurances and control layers could be built into the AUKUS Office structure and mandate and include things such as:

- A framework of mutually agreed trade facilitation rules and principles. Any framework would need to be de-conflicted and unambiguous in application with existing ITAR and other regulatory requirements (i.e. no dual compliance burden). For example, the trade facilitation rules of the AUKUS office could cover IP transfer, data transfer and storage, freight mechanisms and consignee restrictions and dual national access among other aspects. It should cover these in a way that is clearly separate from, and exempt from, the ITAR rules on the same aspects. It should be applied from a whole-of-supply chain perspective and have regard to control frameworks in place within critical supply chain participants, such as logistics operators, shipping and air cargo providers, freight forwarders, customers brokers and other agents.
- A mutually agreed statement of behaviours to guide participant actions, create boundaries and enable decision-making at the operational level. This could be tied to legal or quasi-legal mechanisms with appropriate repercussions to promote and ensure adherence.
- Mutually agreed escalation points and mechanisms for decision making on more complex technology collaboration applications. For example, where the issue of dual-compliance burdens arises due to an aspect of the collaboration or transaction involving a non-AUKUS entity.

If this point for discussion is further explored, it would benefit from the following pre-work to set the AUKUS Office up for success:

- An initial evidence-based analysis of the existing ITAR and other regulatory pain points to best understand how to approach developing a framework of mutually agreed AUKUS trade facilitation rules and principles. This should include in-depth consideration and consultation on the pitfalls of previous ITAR mechanisms such as the Australia-US Defence Trade Cooperation Treaty. This would help ensure learning from past lessons in relation to ITAR reform mechanisms for Australia and the UK and broader ITAR exemption mechanisms that failed on industry uptake due to implementation ambiguity and the perceived dual-compliance burden they create, like the suite of ITAR Special comprehensive export authorizations for NATO, Australia, Japan, and Sweden.
  - A prerequisite to developing an AUKUS Office framework is understanding the capabilities of each AUKUS nation's respective industrial base. All partners should understand their own comparative advantages, adjacent capabilities and gaps – to help maximise impact at an AUKUS, as opposed to national, level. This would include collaborative government and industry planning and assessment to map Australia's defence industry supply chains and identify sovereign capabilities and gaps to develop a prioritised approach to eligibility for AUKUS trade facilitation plans.
2. A public AUKUS workplan: it is critical that the proposed outcomes of AUKUS and how these will be achieved are defined. Work is underway between the three nations and more information is expected to be made public in Q1 2023. An AUKUS workplan could encompass:
- Defined areas of focus, including specific outcomes without being wedded to solutions to leave scope for innovation.
  - A timeline of these areas of focus including specific technology readiness levels (TRL) and proposed applications.
  - A charter of behaviours for government, industry and other institutions which drives AUKUS defence outcomes and disincentivises adverse behaviours, such as protection of market share, and rewards positive behaviours.



The need for cultural and organisational change is not a new issue for the Australian Department of Defence. A number of change initiatives have been undertaken, including the Pathway to Change (2012), First Principles Review (2015) and the ongoing Defence Strategic Review.<sup>70</sup> What is new is the urgency of current geopolitical conditions: Australia no longer has a ten-year window to prepare for conflict.<sup>71</sup>

This imperative, and others laid out in Defence's Strategic Update (2020), necessitate culture change at a scale and speed not seen in the past three decades. The need for a credible deterrence on our doorstep is fundamentally different than Australia's recent deployments across Afghanistan, Iraq and Syria. As such, a fundamental change in culture and behaviours is required to reflect the clock is ticking faster.

#### 4.3.1 INSIGHTS

##### 1. The Government-industry relationship could be more conducive to innovation

Defence and defence industry are intertwined in a way that does not exist in many other markets. Primes, and therefore indirectly other companies in the supply chain, often have one customer who sets the rules of engagement, while simultaneously being the single source of demand. This structure can result in the repetitious cycle of Defence issuing requirements and industry responding through tender processes. This relationship is not conducive with a swiftly evolving security landscape.

Currently, government largely sets the guardrails for the art of the possible via requirements and stipulations in tenders. This leaves industry in a largely reactive posture with less room to innovate for fear of tender non-compliance. This cycle can stymie innovation and ultimately defence outcomes. Industry knows its solutions and potential best and can make valuable contributions to tender processes by helping shape requirements, such as offering solutions that have not yet been requested or are outside of the tender requirements.

An accelerated shift in procurement approach, away from requesting narrow solutions to communicating broader problem statements, outcomes and goals to industry would leave more space for innovation. Industry could then provide responses outlining what is possible, the associated timeframes and cost. Government could apply processes that enable solutions to be co-designed with industry in a competitive setting. This would not require any fundamental changes to existing legislation, but could instead establish a new way of doing business under the existing rules and policies.

If implemented well, building shared trust and belief between government and industry in defence outcomes would ensure industry has the capital and talent ready and available to invest in a timely way.

##### 2. Risk tolerances should be weighed against the risk of failure to act

As outlined, Australia's location in the Indo-Pacific necessitates a heightened credible deterrence. This shift in conditions should be reflected in Defence's approach to risk. Financial, schedule, reputational and regulatory risks should not be considered in isolation, but against the escalating risk of capability gaps which undermine Australian and Indo-Pacific security.

The risk of not acting should be as prominent as the risk of failure in decision-making processes. Accelerating away from the holistic development and procurement of capabilities to an iterative approach would help avoid obsolescence and redundancy. The increased use of rapid prototyping and acquisition models, with smaller, regular 'gated' development approaches could facilitate innovation and growth at a speed, something more holistic procurement cannot achieve. A model of shared risk and responsibility, which allows for adaptive content over time, is more appropriate in a world of advanced technological capabilities.

Stakeholders also raised concerns regarding the problem of NOFORN (not for release to foreign nationals) over-classification. In essence, low ranking officers and officials can stamp NOFORN on documentation that requires highly ranked officers and officials to declassify. A default mindset of redaction and censoring can stymie integration and sharing among allies.

##### 3. New methods and market participants can help drive innovation

Historically, third-party finance, such as private equity and venture capital, has played a limited role in defence. Funds have generally avoided the regulatory and reputational risks associated with the development of missiles and other armaments. However, as defence advanced technologies have grown in prominence, so has the appetite of funds to support fledgling technologies with defence applications.

The US is leading the way in creating space for capital-backed innovations. For example, the Defense Innovation Unit (DIU) was set up 'to rapidly prototype and field advanced commercial solutions that address national security challenges.'<sup>72</sup> Focusing on six areas (AI, autonomy, cyber, energy, human systems and space), the DIU works alongside US Department of Defense partners and venture capital with the aim of moving from problem identification to prototype contract award in 60 to 90 days – in stark contrast to traditional Department of Defense contracting which often takes more than 18 months.<sup>73</sup> Closer to home, Australia is investing A\$1 billion in critical technologies as part of the National Reconstruction Fund. Critical technologies were defined across seven categories, including: advanced materials and manufacturing; AI, computing and communications; biotechnology, gene technology and vaccines; energy and environment; quantum; sensing, timing and navigation; and transportation, robotics and space.<sup>74</sup>

## In-Q-Tel case study

In-Q-Tel (IQT) is a US Government-funded venture capital firm based in Arlington, Virginia. IQT's mission is to enhance national security for the US and its allies by identifying and partnering with startup companies developing innovative technologies to support and equip the Central Intelligence Agency (CIA) and other agencies.

Created in 1999, as the global technological evolution and internet was underway, IQT helps the CIA and government agencies procure cutting-edge and impactful technologies from innovative hubs in Silicon Valley and beyond. The firm combines the strengths of government agencies' security knowledge and Silicon Valley's innovation and technological advantages. IQT's executive team and board of trustees consists of experts and senior executives from both the technology industry and government agencies, such as the CIA and Congress.<sup>75</sup>

IQT's investments in their industry partnerships include both the work program element and an equity stake (usually in the form of a warrant). IQT has made over 500 investments (one investment each week on average), which range from A\$500,000 to \$3 million and usually involve collaboration with other government partners. These investments seek dual-use technologies for both commercial and national security purposes.<sup>76</sup>

Since its creation, the US intelligence and national security communities have relied on IQT and its subsidiaries platforms (including IQT Labs, IQT Emerge and B.Next) to address technology needs and keep ahead of technology curve. IQT has established several initiatives and teams to focus on different stages and areas of its industry partnership:

- IQT Lab: a global open-source ecosystem to encourage collaboration among technologists, designers and engineers in the intelligence and software development community around the world.
- IQT Emerge: works with the US government innovation pipeline to connect with entrepreneurs to support early-stage technology development for the national interest.
- B.Next: aims to highlight the national security implications of infectious disease outbreaks by bringing together and building biology, technology and US national security.

IQT also has a list of industry and product portfolios, from communications and AI-enabled applications to trusted infrastructure and space. A snapshot of IQT portfolios include:

- Colossal: biotechnology
- Satellite Vu: space
- Hadean: AI-enabled applications
- Fortify: materials and manufacturing
- Fortanix: trusted infrastructure
- Vaarst: autonomy and robotics.

The IQT approach has been recognised as a success and is widely viewed as a model that could potentially be implemented in other industries. However, there are also risks associated with the IQT model, such as inappropriately or unnecessarily exposing the CIA to foreign intanglements.<sup>77</sup>





The Defence Innovation Hub and the Next Generation Technologies Fund have also played a key role in providing an additional pathway for the potential procurement of innovative technologies by Defence. While these programs have had some success, they can potentially be re-energised and enhanced with AUKUS through access to more agile and accelerated US innovation processes, contracting suites and lessons learned.<sup>78</sup> The states and territories also have a role to play. For instance, the Australian Capital Territory has outlined the establishment of an advanced technology hub as part of its economic strategy.<sup>79</sup>

There is also space for increased direct Defence funding of startups when third parties are not willing to provide funding, where Defence can step in to fill the gap. Due to the monopsonic nature of defence, it often isn't appropriate to take a global, traditional series approach to capital raising. Further, Australia's sovereign interests can be misaligned with investors solely seeking maximum returns, which in the past has resulted in sovereign capabilities being sold and lost to other nations. An effective defence start-up and scale-up environment is essential to modern manufacturing and sovereign capability.

### NATO's Innovation Fund case study

The NATO Innovation Fund is the world's first multi-sovereign venture capital fund. The €1 billion fund will be invested in startups and other venture capital funds for the purpose of developing emerging and disruptive dual-use technologies to address critical security and defence challenges.<sup>80</sup> In June 2022, the fund was launched by 22 member countries: Belgium, Bulgaria, Czech Republic, Denmark, Estonia, Germany, Greece, Hungary, Iceland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Spain, Turkey and the UK.<sup>81</sup>

NATO Secretary, General Jens Stoltenberg, expects the fund will transform NATO countries' security and strengthen the alliance's innovation system over the coming 15 years.<sup>82</sup> NATO acknowledges emerging and disruptive technologies present both opportunities and risks to NATO and its member countries, and believes it is necessary to work with public and private sector industry partners and academia to adopt new technologies, establish principles and stay at the forefront of technology.<sup>83</sup>

The identified areas of emerging technologies include:

- artificial intelligence
- big-data processing
- quantum-enabled technologies
- autonomy, biotechnology and human enhancement

- novel materials
- energy
- propulsion and space.<sup>84</sup>

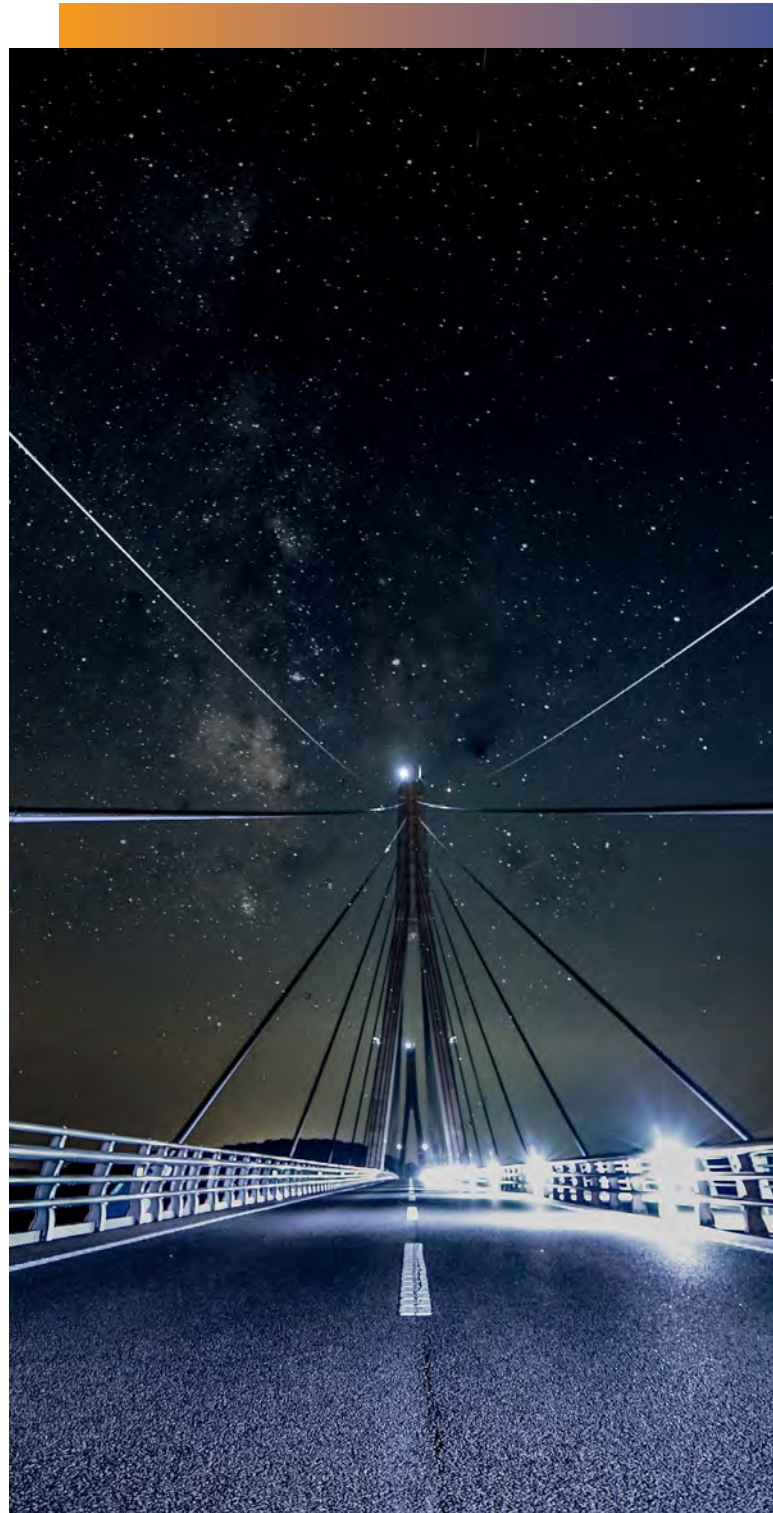
The NATO Innovation Fund will tackle the problems faced by many tech startups in attracting sufficient investment during lengthy research and time-to-market phases. The fund positions itself as a unique investor with an extended 15-year run-time and the ability to invest in other venture capital funds that align with the fund's strategic objectives, including:

- seeking cutting-edge technologies to strengthen the alliance's defence and security capability
- bolstering deep-tech innovation ecosystems across the alliance
- supporting deep-tech startups to develop their portfolios through to commercial success.

The NATO Innovation Fund will operate alongside other NATO initiatives, such as the Defence Innovation Accelerator for the North Atlantic (DIANA) program and NATO's Advisory Group on Emerging and Disruptive Technologies, to directly engage innovator communities and cultivate a transatlantic defence innovation and cooperation ecosystem. These initiatives will serve in NATO's effort to foster innovation and protect efforts from potential adversaries and competitors.<sup>85</sup>

#### 4.3.2 POINTS FOR DISCUSSION

1. Cultural change across Defence: this would involve inspiring change across Defence to reflect the changing balance of risks. This could include updated practices, processes, templates and training to drive behaviour change at decision-making levels, integrated into the One Defence Capability System (ODCS).
2. Rapid prototype and implementation procurement models: this would involve moving fast through capability identification and testing to the manufacturing of a small number of units, before further refinement and manufacturing cycles. Acquisition processes could be gated and based on success or failure, not linear procurement, commensurate with the size, scale and complexity of different capability sets. This should be considered in parallel to ongoing reforms to the ODCS, which are simplifying tailored capability pathways and providing greater opportunities for capability acceleration.
3. Enhance the current capability development and procurement process: this would involve introducing methods that allow for co-design by industry and Defence of suitable solutions in a competitive environment (for example, a competitive dialogue), as early as possible in the ODCS.
4. State involvement in the funding of innovative startups: in critical AUKUS areas, direct state involvement in start-up funding should be considered. This could be modelled on the US's In-Q-Tel innovation model.



## 4.4 PROCUREMENT

Procurement reform alone will not result in the acceleration of technologies that AUKUS calls for, and therefore should not be its focus. However, there are well-known areas for improvement within Defence's existing procurement processes that could be addressed as part of existing programs of work.<sup>86</sup>

For example, the recent review into the Australian Standard for Defence Contracting (ASDEFCON) contracting suite within Capability Acquisition & Sustainment Group (CASG) highlighted a number of possible reforms to reduce 'red tape'.<sup>87</sup> These recommendations should be pursued, with an overarching goal of instilling a sense of urgency in Defence procurement processes.

### 4.4.1 INSIGHTS

#### 1. An increased sense of urgency could enhance existing processes

Arduous procurement processes will constrain AUKUS's success. Specifically, onerous processes and 'red tape' were consistently highlighted as a significant cost and a limiting factor of innovation. For example, one large defence company noted that over a three-year program of spending they had interacted with more than 80 different individuals in Defence.<sup>88</sup> At any point in the program, concerns flagged by any one individual resulted in significant increases in time and cost. This is driven in part by a risk-averse culture which sees project managers seek advice and reassurance from different parts of Defence (including legal, commercial and the Financial Investigation Service) prior to making a procurement related decision. From a project manager's point of view, it can make sense to delay a decision until the individual risk is outsourced to (or spread across) other parts of Defence, rather than expose themselves to potential criticism.

While there is a clear role for proper process, more active calculated engagement with risk is likely appropriate. Individuals should not be overly incentivised to delay difficult decisions, but should instead be armed with a framework and the backing of the government to allow them to move quickly and address problems early.

SMEs highlighted that the time and cost spent navigating procurement procedures regularly resulted in alternative funding being sought – often international investment which could be purchased by Australian entities at a later, more costly, date.

#### 2. Industry engagement could be improved

Effective communication between government and industry allows companies to better inform Defence how capability needs could be met, at what cost, and provide innovative solutions to problems. From problem definition through to development, manufacture, logistics and application, industry has a contribution to make.

In Australia, the Australian Industry & Defence Network (AIDN), the Australian Industry Group (Ai Group) and the Defence Teaming Centre (DTC) advocate for Defence Industry. Ai Group's Defence Council is the peak national representative body for the Defence Industry, representing primes and SMEs through shared working groups and its national executive. The AIDN represents Australian SMEs who operate domestically and abroad. The DTC is based in Adelaide and focuses on connecting and supporting industry to develop capability and competitiveness in defence markets. All three organisations are not-for-profit and grapple with the competing demands of raising money, preserving organisational neutrality and delivering balanced advocacy. AIDN in particular is state-based and depends on a 'federalised' model for getting business done, which is sometimes at odds with a national mandate.

Industry and research organisations reported mixed levels of communication with Defence. In particular, the seemingly irregular use of probity to limit communication was a point of concern. Consistent communication throughout procurement processes can enable industry to respond in a holistic, efficient manner. Greater foresight of up-coming tenders and more thorough clarification and debrief opportunities could better equip industry to respond to future tenders.

The Australian Government plans to engage with industry partners in early 2023, as initiatives are agreed trilaterally, and specific capabilities are identified for acceleration.<sup>89</sup> This is an important first step in what should be open, continual dialogue between industry and government on AUKUS capabilities.

### 3. Defence commercial and contracting resource pools are under increasing strain

Industry reported two key concerns with commercial and contracting discussions. Firstly, the large volume of Defence Industry proposals can stretch departmental resources and act as a constraint, leading to project delays. The demanding defence environment warrants a review of the current level of procurement resources.

Secondly, stretching existing resources inevitably results in a large workload for key personnel, particularly procurement leads, which in turn can lead to delays. A deepening of the Defence procurement talent pool could help alleviate this issue.

These constraints are resulting in increasingly risk-averse procurement behaviour which can be illustrated through the application of the Commonwealth Procurement Rules. Chapter 4 of these rules, 'Achieving value for money', is well defined and emphasises that officials 'must be satisfied' that the procurement achieves a value for money outcome. It also sets out criteria for making a value for money assessment. However, the following clause, entitled 'Broader benefits to the Australian economy', although it applies to all procurements greater than A\$4 million, offers no criteria or practical guidelines. As a result, there is limited uniformity in its application and it can be under-applied in practice.



#### 4.4.2 POINTS FOR DISCUSSION

1. AUKUS-related procurement 'fast lane': this could take the form of a wholly separate 'AUKUS procurement function' with a supporting detailed memorandum of agreement to empower the three nations to operate with speed, precision and agility. This could sit within the proposed AUKUS Office.

The success of expedited procurement is reliant on reducing the number of individuals in decision chains and replacing, not adding to, existing bureaucracy. Lessons learned from this accelerated procurement function could also help inform wider reforms to the ODCS, including the recent push to simplify and accelerate capability development and delivery pathways.

This point for discussion complements the Australian Government's existing focus on the quality of defence spending, and the rectification of systemic issues in the delivery of defence capabilities as a priority.<sup>90</sup> Existing focus areas include:

- establishing an independent projects and portfolio management office within the Department of Defence
  - requiring monthly reports on Projects of Concern and Projects of Interest to the Minister for Defence and Minister for Defence Industry
  - establishing formal processes and 'early warning' criteria for placing projects on the Projects of Concern and Projects of Interest lists
  - fostering a culture in Defence of raising attention to emerging problems and encouraging and enabling early response
  - providing troubled projects with extra resources and skills
  - convening regular Ministerial summits to discuss remediation plans.
2. Refresh of Commonwealth Procurement Rule 4.7 'Broader benefits to the Australian economy': the development of criteria and guidelines for the application of this rule could reduce ambiguity and inconsistency in its application.
  3. Adjust risk culture: consider initiatives directed at assessing the current risk culture in Defence procurement and move towards a balanced risk approach that reflects current conditions.

### 4.5.1 INSIGHTS

#### 1. Localisation is the new globalisation

Supply chain security is of critical importance to defence capabilities (see 3.1 Increasing the resilience of defence supply chains). While domestic processes are associated with increased security, the Australian market for defence equipment is not large enough to sustain a fully self-sufficient suite of Defence Industry capabilities. Defence policy for Australian industry therefore encourages the development and maintenance of critical industry capabilities that meet Australia's strategic priorities for the longer-term development and support of Australian defence capability and military self-reliance. The government's objective is 'to have a sustainable and competitive Defence Industry base, with efficient, innovative and durable industries, able to support a technologically advanced ADF.'<sup>91</sup>

Defence industry in Australia is characterised by a few large, global primes with an Australian presence, supported by an expansive network of defence industries, many of which are SMEs. AUKUS presents an opportunity for Australia to grow its own sovereign defence prime, leveraging talent and know how to bring processes onshore. Supply chain fragility exhibited during the COVID-19 pandemic has reinvigorated discussion about the importance of a sovereign industry capability and the need to build local manufacturing infrastructure for critical technologies of strategic national importance.

To maximise the impact of AUKUS, a rapid accreditation process for production systems from the UK and US could be put in place. The ability to undertake domestic production at scale and quickly, where appropriate, is currently constrained by the processes associated with Defence Industry Security Program (DISP) compliance, ITAR protocols and human resource clearances.

Given the unfolding security environment, renewed focus on the role of stockpiling in a resilient defence supply chain is also warranted. The benefits of the strategic warehousing of defence assets, or goods essential to their operation and maintenance, are growing.

#### Guided Weapons and Explosive Ordnance Enterprise case study

The Guided Weapons and Explosive Ordnance (GWEO) Enterprise was established in March 2021 by the Australian Government.<sup>92</sup> The GWEO Enterprise aims to enhance the ecosystem and supply chain to support Defence's inventory demand. The enterprise has a multi-capability structure to support Defence's requirements in manufacturing, research and development, education and training, test and evaluation, maintenance and repair, storage and distribution and disposal.

To help develop supply chains and meet volume requirements during the GWEO Enterprise development, Defence has built a GWEO Enterprise partnership structure that includes an enterprise partner panel, selected strategic partners, as well as subcontracting options with SMEs:

- The above-the-line enterprise partner panel members include the Australian Missile Corporation, Sovereign Missile Alliance and Aurecon Advisory. Panel members will help the GWEO Enterprise analyse the current and future capability and constraints, as well as recommend development options.
- The initial stage below-the-line strategic partnerships are with Lockheed Martin Australia and Raytheon Australia. The strategic partnerships will help the GWEO Enterprise develop and secure inventory options for GWEO products.
- SMEs will not be directly contracting with Defence, but will be allowed to subcontract to GWEO Enterprise's strategic partners.

Defence confirmed the facilities at Mulwala and Benalla will remain key assets and play a significant role in the GWEO Enterprise project. Defence will consult with its strategic partners to accelerate and utilise these two facilities as the GWEO Enterprise develops.

Defence adopted a three-phase plan to establish the GWEO Enterprise:

- Short term (0–5 years): the 'accelerate' phase – focusing on the design and implementation of a system to accelerate procurement and increase Australia's manufacturing capability.
- Medium term (5–10 years): the 'grow' phase – focusing on the co-development of future weapons and components.
- Long term (10–15 years): the 'sustain' phase – achieved an increased sovereign capability in the design, development and manufacture of selected weapons.

## 2. Australian Industry Capability and risk tolerances should reflect contemporary capability needs

While effective international collaboration is essential, Australia must also consider when and where it is appropriate to develop truly sovereign capabilities – the ability to execute and sustain defence operations without reliance on foreign assistance. The government’s primary means of domesticating supply chains is through the Australia Industry Capability (AIC) program.

### The AIC Program

The AIC program seeks to:

- provide opportunities for Australian companies to compete on merit for defence work within Australia and overseas
- influence foreign prime contractors and original equipment manufacturers, including Australian subsidiaries, to deliver cost-effective support
- facilitate transfer of technology and access to appropriate intellectual property rights
- encourage investment in Australian industry.<sup>93</sup>

In practice, primes’ AIC obligations are defined through the AIC contractual framework, which outlines how contractors engaged by Defence must act to meet AIC program objectives. Primes subsequently provide an AIC plan, which defines how industry requirements will be met through the implementation of agreed Australian Industry Activities. Since September 2020, these AIC plans have been subject to audits under the AIC program.

Industry and research institutions reported mixed feedback on the effectiveness of AIC in its current guise. The aims of the AIC program could be revisited to ensure they specifically articulate expectations in our increasingly localised and uncertain world. For example, is the focus maximising domestic manufacturing? If not, which Australian industries should be protected and where is it more appropriate to import for trusted partners? Which products should be stockpiled and which should be manufactured domestically? Answering these questions is more important than ever, as a situation where Australia is isolated from its defence supply chains grows increasingly probable.

Any revision of the AIC program’s aims would benefit from a focus on enhancing resilience and facilitating the prioritisation of domestic activities. This would have ramifications for the Sovereign Industry Capability Priorities (SICPs), which have the potential to inform and guide industry towards the government’s priorities and assist in appropriate investments being made to support these. There may also be space for the more challenging question of how far Australia can go in defining sovereign capability and to what extent it can be protected. In a globalised world, and particularly in the context of the AUKUS partnership, legislated protectionism may seem contra to the partnership’s intent, but a determination should be made as to whether the current strategic environment outweighs these risks.



## Legislated Sovereign Preference

International and transnational issues are bringing sovereign preferences under the spotlight. Several countries around the globe have legislated these preferences, either recently or some time ago, to change how domestic activity and exports are prioritised in defence supply chains.

- **Sweden – Stricter Export Controls for Military Equipment (Democracy Criterion) 2017:** On 28 February 2018, the Riksdag adopted a new defence export regulatory framework. This framework introduced a number of stricter requirements in military equipment export controls which included an assessment of ‘democratic status.’ For example, nations with serious and extensive violations of human rights or severe deficits in democratic status would now have this explicitly considered in the assessment of applications for licences.<sup>94</sup>
- **US – Defense Production Act of 1950:** The Act has three main authorities: it authorises the US President to require businesses to accept and prioritise contracts necessary for national defence; it establishes mechanisms to allocate resources to promote national defence; and it authorises control of the civilian economy to manage resources to meet defence needs.<sup>95</sup>

In practice, during the Cold War the US Department of Defence provided capital and interest-free loans and directed mining and manufacturing resources as well as skilled labourers to these two industries. The Act was also used in the 1950s to ensure that government-funded industries were geographically dispersed to prevent the industrial base from being destroyed by a single nuclear attack. During the late 1960s and early 1970s, the Act was used to diversify the US energy mix.

More recently, President Biden invoked the Defense Production Act in December 2021 to scale production and provide parts and labour training in support of the Virginia Class attack submarines.<sup>96</sup>

- **UK – National Security and Investment Act 2021:** The Act empowers the UK Government to call in for review – and potentially prohibit – any qualifying transaction which may give rise to UK national security concerns. This includes:
  - the acquisition of ‘material influence’ in an entity (which may arise in relation to a low shareholding, potentially even below 15 per cent)
  - an increase in an existing stake which results in the investor’s shareholding or voting rights crossing the 25 per cent, 50 per cent or 75 per cent thresholds
  - the acquisition of voting rights in an entity which enables the investor to secure or prevent the passage of any class of resolution governing the affairs of the entity
  - the acquisition of control over assets (including land and intellectual property).<sup>97</sup>
- **European Defence Industry Reinforcement through common Procurement Act (EDIRPA) 2022:** The Act intends to strengthen interoperability and allow the European Defence Technological and Industrial Base (EDTIB) to better adjust and ramp-up its manufacturing capacities to deliver the needed products. The European Commission proposes to commit €500 million of EU budget from 2022 to 2024.<sup>98</sup>
- **Australian Defence Amendment (Sovereign Naval Shipbuilding) Bill 2018 that did not pass:** The proposed bill intended to amend the *Defence Act 1903* to provide that the Commonwealth may only enter into an agreement with an entity for the building of certain vessels for use by the Royal Australian Navy if the vessel is to be constructed in Australia by an Australian shipbuilder. The bill did not pass.<sup>99</sup>

#### 4.5.2 POINTS FOR DISCUSSION

1. Re-evaluation of the AIC program aims: a re-evaluation to reflect Australia's comparative advantages with partners and the increasing fragility of global supply chains.
2. AIC program requirements refinement: adjustments to improve specifications, include clear KPIs, and supporting enforcement arrangements. This should include consideration of whole-of-life capacity.

AIC requirements could also benefit from more practical phasing of solutions. A graduated approach, which focuses on sharing IP, sharing key personnel, onshoring critical component manufacturing before ultimately onshoring entire supply chains, is more practical and functional than mandating fixed percentage Australian manufacturing requirements.

3. Rapid accreditation process for UK and US production systems: accelerating the accreditation of UK and US production systems for use in Australia to incentivise more cross-AUKUS production and collaboration.
4. Re-evaluation of SICPS: a reset of the SICPs from a strategic perspective and in consideration of AUKUS, and global, supply chains.



# GLOSSARY

Acronym	Description
ABCC	Australian British Chamber of Commerce
ADF	Australian Defence Force
Ai Group	Australian Industry Group
AIC	Australian Industry Capability
AGSVA	Australian Government Security Vetting Agency
AIDN	Australian Industry & Defence Network
AmCham	American Chamber of Commerce in Australia
ASDEFCON	Australian Standard for Defence Contracting
ASPI	Australian Strategic Policy Institute
AUSMIN	Australia–United States Ministerial Consultations
CASG	Capability Acquisition & Sustainment Group
CIA	Central Intelligence Agency
CSIRO	The Commonwealth Scientific and Industrial Research Organisation
DARPA	Defense Advanced Research Projects Agency (US)
DIANA	Defence Innovation Accelerator for the North Atlantic
DISP	Defence Industry Security Program
DIU	Defence Innovation Unit
DSP-5	Department of State Publication No.5
DSR	Defence Strategic Review
DSTG	Defence Science and Technology Group
DTC	Defence Teaming Centre
ECI	Economic Complexity Index
EDTIB	European Defence Technological and Industrial Base
GWEO	Guided Weapons and Explosive Ordnance
IQT	In-Q-Tel
ITAR	International Traffic in Arms Regulations (US)
MLA	Manufacturing License Agreements
MRF-D	Marine Rotational Force–Darwin
NATO	North Atlantic Treaty Organization
NOFORN	not for release to foreign nationals
NTIB	National Technology and Industrial Base (US)
ODCS	One Defence Capability System
OECD	Organisation for Economic Co-operation and Development
OGLs	Other General Licenses
PPP	purchasing power parity
QLabs	QuintessenceLabs
R&D	research and development
SMEs	small and medium-sized enterprises
SICPs	Sovereign Industry Capability Priorities
SSN	SSN is the US Navy hull classification symbol for nuclear-powered submarines. ‘SS’ denotes a submarine and the ‘N’ denotes nuclear power
STEM	Science, Technology, Engineering and Mathematics
TAA	Technical Assistance Agreement
UK	United Kingdom
US	United States
WHO	World Health Organization
WTO	World Trade Organization

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# CONTACTS



**TOM SEYMOUR**

*CEO, PwC Australia*

[tom.seymour@pwc.com](mailto:tom.seymour@pwc.com)

**SEAN GREGORY**

*Chief Strategy, Risk & Reputation Officer, PwC Australia*

[sean.gregory@pwc.com](mailto:sean.gregory@pwc.com)

**AMANDA MCINTYRE**

*Defence Lead Partner, PwC Australia*

[amanda.b.mcintyre@pwc.com](mailto:amanda.b.mcintyre@pwc.com)

**TETYANA WOTTON**

*Defence Partner, PwC Australia*

[tetyana.wotton@pwc.com](mailto:tetyana.wotton@pwc.com)

**JAMES LOUGHRIDGE**

*Senior Economist, PwC Australia*

[james.b.loughridge@pwc.com](mailto:james.b.loughridge@pwc.com)

**APRIL PALMERLEE**

*CEO, American Chamber of Commerce in Australia Australia*

[aprilpalmerlee@amcham.com.au](mailto:aprilpalmerlee@amcham.com.au)

**DAVID MCCREDIE AM OBE**

*CEO, Australian British Chamber of Commerce*

[dmccredie@britishchamber.com](mailto:dmccredie@britishchamber.com)



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